

AGENDA

MATANUSKA-SUSITNA BOROUGH PLATTING BOARD AGENDA

PLATTING BOARD

Jordan Rausa, Chairman
 LaMarr Anderson
 George Thompson
 Pio Cottini
 Dennis Vau Dell
 Wilfred Fernandez
 John Shadrach, Alt #2
 Justin Hatley, Alt #1
 Vacant, Seat #3



PLATTING DIVISION

Fred Wagner, Platting Officer
 Peggy Horton, Platting Technician
 Amy Otto-Buchanan, Platting Technician
 Cheryl Scott, Platting Technician
 Sloan Von Gunten, Platting Div. Specialist

*Assembly Chambers of the
 Dorothy Swanda Jones Building
 350 E. Dahlia Avenue, Palmer*

MATANUSKA-SUSITNA BOROUGH PLATTING BOARD AGENDA FEBRUARY 20, 2020

1. CALL TO ORDER

- A. Roll Call and Determination of Quorum (by Secretary)
- B. Pledge of Allegiance
- C. Approval of Agenda

2. APPROVAL OF MINUTES

- A. January 16, 2020

3. AUDIENCE PARTICIPATION (Three minutes per person, for items not scheduled for public hearing)

4. UNFINISHED BUSINESS

(There is no Unfinished Business)

5. RECONSIDERATIONS/APPEALS

(There is no Reconsideration/Appeals)

6. PUBLIC HEARINGS

- *Platting Board members may not receive or engage in ex-parte contact with the applicant, other parties interested in the application, or members of the public concerning the application or issues presented in the application. Does any board member need to disclose ex-parte contact or financial gain conflict for this case.*

A. LANIKAI ESTATES LLC: The request is create a t-turnaround Public Use Easement at the western terminus of E. Wagonwheel Drive, in Tax Parcel A7, to be known as **OSTERMILLER PUE**, containing 13,286 sf +/- . The proposed Public Use Easement is located west of E. Wagonwheel Drive, parcel is located west of N. Britchenstrap Drive and north of N. Farm Loop, (Tax ID #118N02E18A007); within the E ½ W ½ NE ¼ Section 18, Township 18 North, Range 02 East, Seward Meridian. Community Council Farm Loop and in Assembly District #1 Tim Hale

- *Platting Board members may not receive or engage in ex-parte contact with the applicant, other parties interested in the application, or members of the public concerning the application or issues presented in the application. Does any board member need to disclose ex-parte contact or financial gain conflict for this case.*

B. MARY SUSANNE GOODWIN: The request is to create a 58-lot, 2-phase master plan known as **GOODWIN ESTATES**, containing 80 acres +/- . The property is located west of N. Palmer-Fishhook Road and north of E. Tex-Al Drive (Tax ID #18N01E10C007 & 18N01E10D006); within the S ½ Section 10, Township 18 North, Range 01 East, Seward Meridian. Community Council: Fishhook and in Assembly District #6 Jesse Sumner

- *Platting Board members may not receive or engage in ex-parte contact with the applicant, other parties interested in the application, or members of the public concerning the application or issues presented in the application. Does any board member need to disclose ex-parte contact or financial gain conflict for this case.*

C. PLATTING BOARD RESOLUTION 2020-004: Adoption of the Subdivision Construction Manual.

7. ITEMS OF BUSINESS & MISCELLANEOUS

(There is no Items of Business & Miscellaneous)

8. PLATTING STAFF & OFFICER COMMENTS

A. Adjudicatory *(if needed)*

- *Definition: Law. To hear and settle an issue or a question regarding code.*

B. Upcoming Platting Board Agenda Items (Staff: Fred Wagner & Clerk: Sloan Von Gunten)

- Introduction for the March 5, 2020 Platting Board Hearing *(Informational Only – Subject to change)*
 - JAR, Case 2020-007
 - New Hope Est MSP, Case 2020-012

9. BOARD COMMENTS

10. ADJOURNMENT

THE PLATTING BOARD WILL CONVENE AT **1:00 P.M.** on **February 20, 2020** in the **Assembly Chambers** of the **Dorothy Swanda Jones Building**, 350 E. Dahlia Avenue, Palmer, Alaska. If you would like to send comments regarding the proposed action, please mail to MSB, Platting Division, 350 E. Dahlia Ave, Palmer, AK 99645 or E-mail to: platting@matsugov.us. Comments received from the public after the platting board packet has been written and sent to the board, will be given to the Platting Board in a “Hand Out” the day of the meeting. All public comments are due one (1) day prior, by 5:00 p.m.

MINUTES

**MATANUSKA-SUSITNA BOROUGH
PLATTING BOARD MINUTES****REGULAR MEETING
JANUARY 16, 2020**

The regular meeting of the Matanuska-Susitna Borough Platting Board was held on January 16, 2020, at the Matanuska-Susitna Borough Assembly Chambers, 350 E. Dahlia Avenue, Palmer, Alaska. The Meeting was called to order at 1:00 p.m. by Chair Jordan Rausa.

1. CALL TO ORDER**A. ROLL CALL AND DETERMINATION OF QUORUM (by Administrative Specialist)**

Platting Board members present and establishing a quorum:

Mr. Pio Cottini, Assembly District #1
Mr. LaMarr Anderson, Assembly District #2, Vice Chair
Mr. Jordan Rausa, Assembly District #4, Chair
Mr. Dennis Vau Dell, Assembly District #5
Mr. Wilfred Fernandez, Assembly District #6
Mr. George Thompson, Assembly District #7
Mr. Justin Hatley, Alternate

Platting Board members absent and excused were:

Mr. John Shadrach, Alternate
VACANT, District #3

Staff in attendance:

Mr. Fred Wagner, Platting Officer
Ms. Sloan Von Gunten, Platting Administrative Specialist
Ms. Peggy Horton, Platting Technician
Ms. Amy Otto-Buchanan, Platting Technician

B. THE PLEDGE OF ALLEGIANCE

The pledge of allegiance was led by Platting Board Member LaMarr Anderson

C. APPROVAL OF THE AGENDA

Chair Rausa inquired if there were any changes to the agenda.

GENERAL CONSENT: The agenda was approved without objection.

2. APPROVAL OF MINUTES

Chair Rausa inquired if there were any changes to the minutes for December 5, 2019.

GENERAL CONSENT: The minutes for December 5, 2019 were approved without objection.

Chair Rausa inquired if there were any changes to the minutes for December 19, 2019.

- Correct platting board member name on page 10.
- Correct negativity to the minutes on page 10.

**MATANUSKA-SUSITNA BOROUGH
PLATTING BOARD MINUTES****REGULAR MEETING
JANUARY 16, 2020**

MOTION: Platting Member Vau Dell moved to send the December 19, 2019 minutes back to staff to for rewrite. The motion was seconded by Platting Member Anderson.

Discussion on the December 19, 2019 correction to the mintues.

Platting Member Vau Dell called the question.

VOTE: The Platting Board voted on calling the question. The call passed with all in favor.

VOTE: The motion passed with all in favor.

3. AUDIENCE PARTICIPATION (*Three minutes per person, for items not scheduled for public hearing*)

4. UNFINISHED BUSINESS: Quasi-Judicial Matters

Mr. Wagner recused himself from Headrick Subdivision.

A. HEADRICK SUBDIVISION: Adoption on the Findings of Facts in support of Platting Officer's Decision.

MOTION: Platting Member Hatley moved to adopt the findings of fact in affirmation of the Platting Officer's decision of approval for Headrick Subdivision. The motion was seconded by Platting Member Vau Dell.

VOTE: The motion passed with all in favor. The are 9 findings of fact.

B. RECONSIDERATIONS/APPEALS
(*none at this time*)

C. PUBLIC HEARINGS: Quasi-Judicial Matters

Platting Board members may not receive or engage in ex-parte contact with the applicant, other parties interested in the application, or members of the public concerning the application or issues presented in the application.

A. ALASKA STATE LAND SURVEY 2015-11: The request is to divide SE $\frac{1}{4}$ SW $\frac{1}{4}$, S $\frac{1}{2}$ SE $\frac{1}{4}$, NE $\frac{1}{4}$ SE $\frac{1}{4}$, Section 18, T16N, R02E, into two Tracts to be known as **Alaska State Land Survey 2015-11**, containing 160.55 acres +/- . The portion of the Old Glenn Highway lying within this parcel is being dedicated as right-of-way. Located on the plan north and south of the Old Glenn Highway and west of the Eklutna Power Plant; within the S $\frac{1}{2}$ Section 18, Township 16 North, Range 02 East, Seward Meridian. Community council: South Knik River and in Assembly District #1: Tim Hale. Continued from the October 6, 2016 & the January 17, 2019 Platting Board Hearing. (*Owner/Petitioner: Cook Inlet Aquaculture Association; Surveyor: CRW; Staff: Amy Otto-Buchanan*)

**MATANUSKA-SUSITNA BOROUGH
PLATTING BOARD MINUTES****REGULAR MEETING
JANUARY 16, 2020**

Chair Rausa:

- read the memorandum regarding quasi-judicial actions into the record;
- queried platting board members to determine if any of them have a financial interest in the proposed case;
- have had any ex parte contact with the applicant, members of the public, or interested parties in the proposed case; and
- if all platting board members are able to be impartial in a decision.

Platting Board Cottini let the board know that he had contact with petitioner in the past. Does not have any financial interest and can be impartial.

There was no objection noted.

Chair Rausa read the case title and description into the record.

Ms. Von Gunten provided the mailing report.

- Stating that 18 public hearing notices were mailed out on September 12, 2016 from the October 6, 2016 Platting Board Meeting..

Ms. Otto-Buchanan provided a staff report

- Gave an overview of the case, #2016-110.
- Answered questions from the Platting Board.
- Staff recommend approval of the case with findings of fact and conditions.

Chair Rausa invited the petitioner for a brief overview.

Mr. Mike Jokela, the petitioner's representative, gave a brief overview.

Chair Rausa opened the public hearing for public testimony.

There being no one to be heard, Chair Rausa closed the public hearing.

Chair Rausa invited the petitioner or their representative to provide their comments.

Mr. Mike Jokela, the petitioner's representative, gave a brief explanation on the trail and answered questions from the platting board.

Chair Rausa closed the petitioner's comments and discussion moved to the Platting Board.

MAIN

MOTION: Platting Member Cottini moved to approve the preliminary plat for Alaska State Land Survey 2015-11. With 11 recommendations, Adding finding #10. The motion was seconded by Platting Member Thompson.

**MATANUSKA-SUSITNA BOROUGH
PLATTING BOARD MINUTES****REGULAR MEETING
JANUARY 16, 2020**

AMENDED

MOTION: Platting Member Anderson moved to amend the motion the add finding of fact #10. The amended motion was seconded by Platting Member Vau Dell.

Discussion ensued from the Platting Board on adding finding #10.

VOTE: The Amended motion to add finding of fact #10 passed with all in favor.

FINDINGS:

- Add #10: The Alaska Heritage Resource Survey indicates the presence of several cultural resources on the eastern portion of the property. Before any development in the area, the Alaska Office of History and Archaeology would like to be contacted.

VOTE: The main motion passed with all in favor. The are 10 findings of fact.

TIME: 1:49 P.M.

CD: 0:43:02

B. MORRIS-KROTO: The request is to divide Tract A, ASLS 75-119, Plat #78-119, into two lots to be known as **Morris-Kroto**, containing 4.6 acres ±. The petitioners are requesting a variance from MSB 43.20.100(I)(1) to allow the proposed lots to be slightly less than 2.5 acres. The property is located approximately 12 miles northwest of Willow, on the east bank of Kroto Creek (Tax ID #1456000T00A), within the SW¼ Section 04, Township 20 North, Range 06 West, Seward Meridian. Assembly District #7 Tam Boeve (*Owner/Petitioner: Glenn & Debra Morris and William & Denis Morris; Surveyor: Actuek; Staff: Peggy Horton*)

Chair Rausa:

- read the memorandum regarding quasi-judicial actions into the record;
- queried platting board members to determine if any of them have a financial interest in the proposed case;
- have had any ex parte contact with the applicant, members of the public, or interested parties in the proposed case; and
- if all platting board members are able to be impartial in a decision.

There was no objection noted.

Chair Rausa read the case title and description into the record.

Ms. Von Gunten provided the mailing report.

- Stating that 10 public hearing notices were mailed out on December 26, 2019.

Ms. Horton provided a staff report

- Gave an overview of the case, #2018-168.
- Staff recommended approval with the findings of facts and conditions.

**MATANUSKA-SUSITNA BOROUGH
PLATTING BOARD MINUTES****REGULAR MEETING
JANUARY 16, 2020**

Chair Rausa opened the public hearing for public testimony.

There being no one to be heard, Chair Rausa closed the public hearing.

Chair Rausa invited the petitioner or their representative to provide their comments.

The petitioner and/or the petitioner's representative was not present at the hearing.

Chair Rausa closed the petitioner's comments and discussion moved to the Platting Board.

MAIN

MOTION: Platting Member Cottini moved to approve the preliminary plat for Morris-Kroto and variance to MSB 43.20.100(I) to allow for slightly less than 2.5 acre lots. With 5 recommendations and adding a recommendation #6. The motion was seconded by Platting Member Hatley.

Discussion ensued by the platting board on the variance.

RECOMMENDATIONS:

- Add #6: The surveyor is to provide a letter to platting staff stating that there are no building setback code violations on Lots 1 or 2.

VOTE: The main motion passed with all in favor. There are 10 findings of fact.

TIME: 2:25 P.M.

CD: 01:17:32

BREAK

TIME: 2:35 P.M.

CD: 01:17:36

7. ITEMS OF BUSINESS & MISCELLANEOUS**A. Election of Officers.****MOTION TO
NOMINATE**

CHAIR: Platting Member Vau Dell moved to nominate Platting Member Rausa for Chair. The nomination was seconded by Platting Member Anderson.

**MOTION TO
NOMINATE**

CHAIR: Platting Member Hatley moved to nominate Platting Member Fernandez for Chair. The nomination was seconded by Platting Member Cottini.

Platting Member Fernandez declined the nomination for the chair.

**MATANUSKA-SUSITNA BOROUGH
PLATTING BOARD MINUTES****REGULAR MEETING
JANUARY 16, 2020**

VOTE: The motion to nominate Platting Member Rausa as Chairman for the 2020 Platting Board year passed with all in favor.

**MOTION TO
NOMINATE**

VICE CHAIR: Platting Member Anderson moved to nominate Platting Member Fernandez for Vice Chair. The nomination was seconded by Platting Member Vau Dell.

VOTE: The motion to nominate Platting Member Fernandez as Vice Chair for the 2020 Platting Board year passed with all in favor.

B. Staff recommends changes to the Policy & Procedure Manual on Reconsiderations & Officer Appeals.

- Mr. Wagner, The Platting Officer, gave a brief overview of the Platting Officer's Appeal Procedures.
- Mr. Wagner answered questions regarding the procedures.
- Discussion on the definitions of who is who ensued between the platting board members.

MOTION: Platting Member Vau Dell moved to approve the addition for the Platting Officer's Appeal Procedure to the Policy & Procedure Manual. The motion was seconded by Platting Member Cottini.

Amended

MOTION: Platting Member Vau Dell moved to amend the motion to add definitions to procedures. The motion was seconded by Platting Member Thompson.

Discussion ensued by the Platting Board on the Officer Appeal Procedure.

Platting Member Vau Dell removed his motion & amendment.

MOTION: Platting Member Thompson moved to adopt the addition for the Platting Officer's Appeal Procedure to the Policy & Procedure Manual. The motion was seconded by Platting Member Cottini.

VOTE: The motion to adopt the addition for the Platting Officer's Appeal Procedure to the Policy & Procedure Manual passed with all in favor.

C. Special Meeting Session on Title 43 White Board List (Session is Optional)

- No session at this meeting time.

TIME: 3:12 P.M.

CD: 01:52:57

**MATANUSKA-SUSITNA BOROUGH
PLATTING BOARD MINUTES****REGULAR MEETING
JANUARY 16, 2020****8. PLATTING STAFF & OFFICER COMMENTS**

- A. Adjudicatory (*if needed*)
- B. Upcoming Platting Board Agenda Items

Mr. Wagner provided a brief update on cases that will be coming before the Platting Board on February 6, 2020. Updated the board on the subdivision construction manual.

Ms. Eileen Probasco updated the platting board on when the subdivision construction manual will be coming before the platting board.

Ms. Von Gunten updated the platting board on the upcoming APA Conference for those who are interested in attending.

9. BOARD COMMENTS

Platting Member Vau Dell was glad to see everyone at the meeting.

Platting Member Thompson had not comments.

Platting Member Hatley commented on the construction manual.

Platting Member Fernandez had no comments.

Platting Member Cottini commented on being safe on the roads.

Platting Member Anderson had not comments.

Platting Member Rausa thanked the board members on electing him as chair for the 2020 year.

10. ADJOURNMENT

With no further business to come before the Platting Board, Chair Jordan Rausa adjourned the meeting at 3:23. (CD: 2:03:11)

JORDAN RAUSA, Platting Board Chair

ATTEST:

SLOAN VON GUNTEN,
Platting Board Clerk

Minutes approved: _____

6A

**STAFF REVIEW AND RECOMMENDATIONS
PUBLIC HEARING
FEBRUARY 20, 2020**

PRELIMINARY PLAT: **OSTERMILLER PUBLIC USE EASEMENT**
 LEGAL DESCRIPTION: **SEC 18, T18N, R02E**
 PETITIONER: **LANIKAI ESTATES LLC**
 SURVEYOR: **KEYSTONE SURVEYING**
 REVIEWED BY: **AMY OTTO-BUCHANAN** **CASE: 2020-003**

REQUEST: The request is create a t-turnaround Public Use Easement at the western terminus of E. Wagonwheel Drive, in Tax Parcel A7 (Tax ID #118N02E18A007), to be known as **OSTERMILLER PUE**, containing 13,286 sf +/- . The proposed Public Use Easement is located directly west of E. Wagonwheel Drive, parcel is located west of N. Britchenstrap Drive and north of N. Farm Loop, within the E ½ W ½ NE ¼ Section 18, Township 18 North, Range 02 East, Seward Meridian.

EXHIBITS:

Vicinity Map, Aerial Maps	Exhibit A – 4 pgs
PUE Application	Exhibit B – 1 pg
Proof of Constructability	Exhibit C – 1 pg
Public Use Easement Document	Exhibit D – 6 pgs

COMMENTS:

Department of Public Works	Exhibit E – 1 pg
Development Services	Exhibit F – 2 pgs
Utilities	Exhibit G – 5 pgs
Public Comment	Exhibit H – 1 pg

DISCUSSION: The parcel is located at the western terminus of E. Wagonwheel Drive, west of N. Britchenstrap Drive and north of N. Farm Loop. Lanikai Estates LLC, owner of Tax Parcel A7, has submitted an Application for Public Use Easement (PUE) Acceptance (**Exhibit B**), the proposed Public Use Easement document (**Exhibit D**) and proof of constructability of the proposed PUE (**Exhibit C**.)

COMMENTS:

Department of Public Works (**Exhibit E**) notes gate shall be removed from the proposed PUE prior to recording or obtain ROW encroachment permit. Development Services, Right-of-Way Coordinator (**Exhibit F**) notes the gate and gate posts are required to be removed and relocated outside of the proposed Public Use Easement before dedication of the PUE can be accepted (see **Recommendation #3**). Apply for a driveway permit for the existing driveway (see **Recommendation #4**).

Utilities: (Exhibit G) GCI has no objections. MTA has a drop telecommunications service to a customer within the proposed Public Use Easement. They will need to know how this will be affected by the construction of the T-turnaround. Enstar advises there is an existing natural gas line with a 15' wide natural gas easement centered on the line according to #2014-014677-0. Attached is an approximate as-built. Enstar objects unless:

- (a) The natural gas line is located and surveyed and a note added: "Surveyed location of natural gas line and centerline of 15' wide natural gas easement" and draw the surveyed location of the line of the map; or
- (b) Add a note: "There is a 15' wide natural gas easement centered on the existing natural gas line" and draw in the approximate location on the map and add "approximate location of natural gas line and centerline of 15' wide natural gas easement."

Staff notes a Public Use Easement document is granting a PUE to MSB. Petitioner may grant the requested easements by document if they choose.

Public Comment: (Exhibit H) Joseph S. Polowy Sr., owner of Lot 2, Block 1, Farm Loop Forty, objects. "Reduction of water table, more fast heavy traffic in residential area and the refusal of MatSu Borough to put in speed humps to protect residents (especially children) because snow plowers and delivery drivers (UPS-FedEx) don't like them.

CONCLUSION:

The proposed Ostermiller Public Use Easement is a t-turnaround cul-de-sac on private property that the petitioner is requesting the borough accept as public right-of-way. The proposed Public Use Easement is unconstructed at this time; surveyor has provided proof of constructability. The Public Use Easement Application was submitted in accordance with MSB 43.15.021, *Public Use Easement Acceptance Procedure*. Borough Staff recommends approval of this Public Use Easement application. No road construction is required.

FINDINGS OF FACT:

1. Surveyor has provided a certified drawing and legal description of the public use easement.
2. The public use easement is constructible and surveyor has provided proof of constructability.
3. Construction of the Public Use Easement is not required.
4. Enstar has requested a 15' wide utility easement.

RECOMMENDATION FOR APPROVAL OF PUBLIC USE EASEMENT: Suggested motion: "I move to approve the Ostermiller Public Use Easement, Section 18, Township 18 North, Range 02 East, Seward Meridian, Alaska, contingent on staff recommendations:"

1. Pay mailing and advertising fee.
2. Provide updated Certificate to Plat executed within 7 days prior to recording and provide beneficiary affidavits from holders of beneficial interest, if any.
3. Remove/relocate gate and gate posts from the Public Use Easement and provide proof of removal/relocation to Platting staff.
4. Apply for a driveway permit and provide a copy of the application to Platting staff.
5. Submit a public use easement document, signed by all owners of record with the legal description and a drawing showing monumentation in accordance with MSB 43.15.021(E) The document must comply with State of Alaska, Department of Natural Resources standards.
6. Submit recording fee payable to the Dept. of Natural Resources.

JENSEN

KOENEN

PA04

QUARTERSTRAP

HAMES

ENDES

WINKERSTAY

WAGONWHEEL

WEATHERVANE

BLINKER

BRITCHENSTRAP

FRISBY

FARM

HAY

EXHIBIT A-2

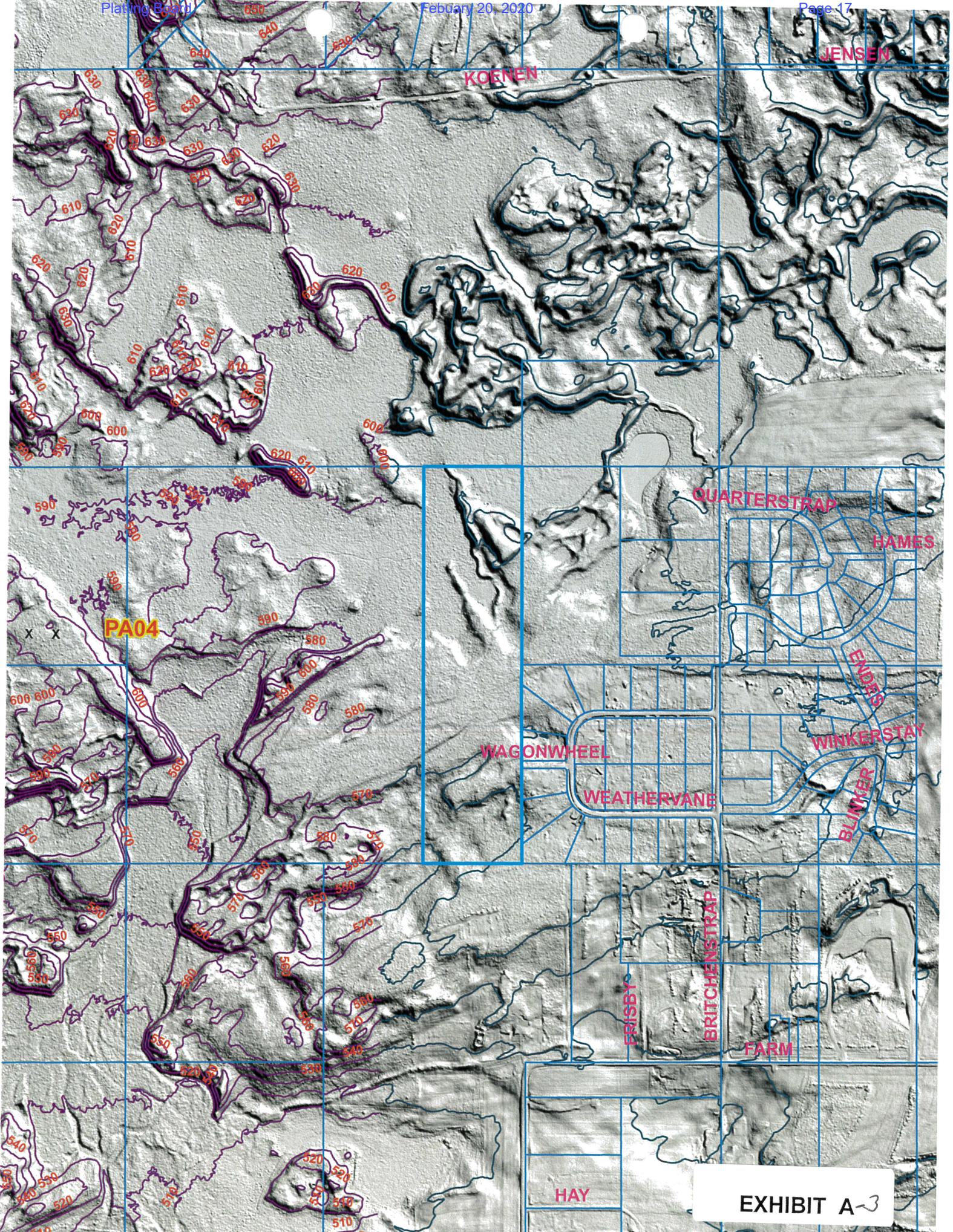


EXHIBIT A-3

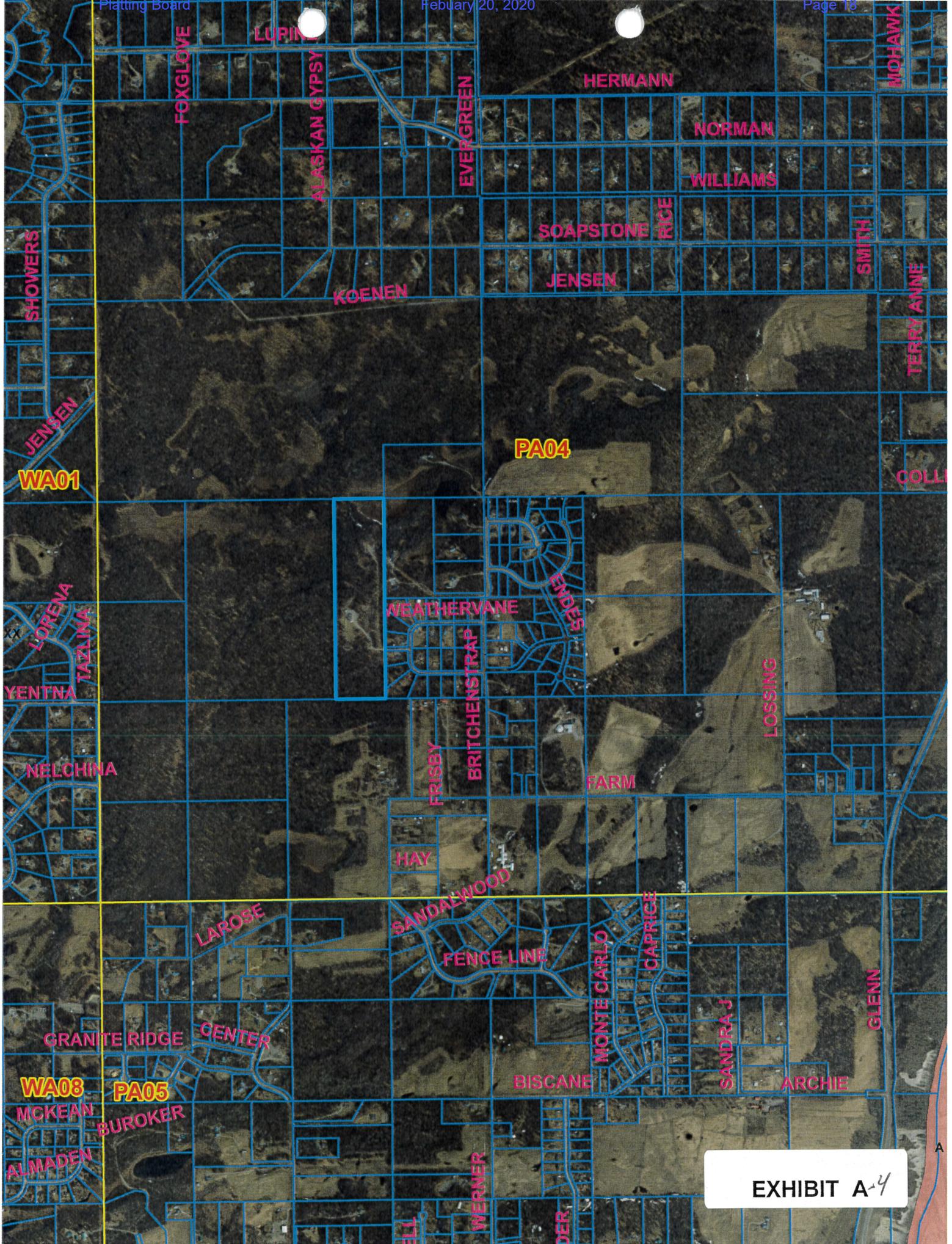


EXHIBIT A-4

APPLICATION FOR PUBLIC USE EASEMENT ACCEPTANCE

Matanuska-Susitna Borough
Telephone: (907) 745-9874

350 East Dahlia Avenue
Palmer, Alaska 99645

1. Petitioner's name, address and telephone number: LANIKAI ESTATES LLC
#F-1 305 N VALLEY WAY PALMER AK 99645-6186 GEORGE & REGGIE ANN OSTERMILLER -
(808) 276-6702 & (808) 344-6966

2. Area of requested easement, Township, Range and Section. *Attach vicinity map and/or drawing showing proposed easement.* E 1/2 W 1/2 NE 1/4, SECTION 18, TOWNSHIP 18 NORTH, RANGE 02 EAST, SEWARD MERIDIAN, ALASKA

3. Surveyor's name, address and telephone number, if applicable. KEYSTONE SURVEYING & MAPPING, P.O. BOX 2216, PALMER, ALASKA 99645 376-7811

4. Public hearing fee to be paid: **\$ 200.00**

RECEIVED
DEC 30 2019

5. Legal description of easement to be accepted. (or see attached sheets)

PLATTING

SEE ATTACHED SHEETS

6. 12.17.19
DATE

George S. Ostermiller
APPLICANT/OWNER OF PROPERTY

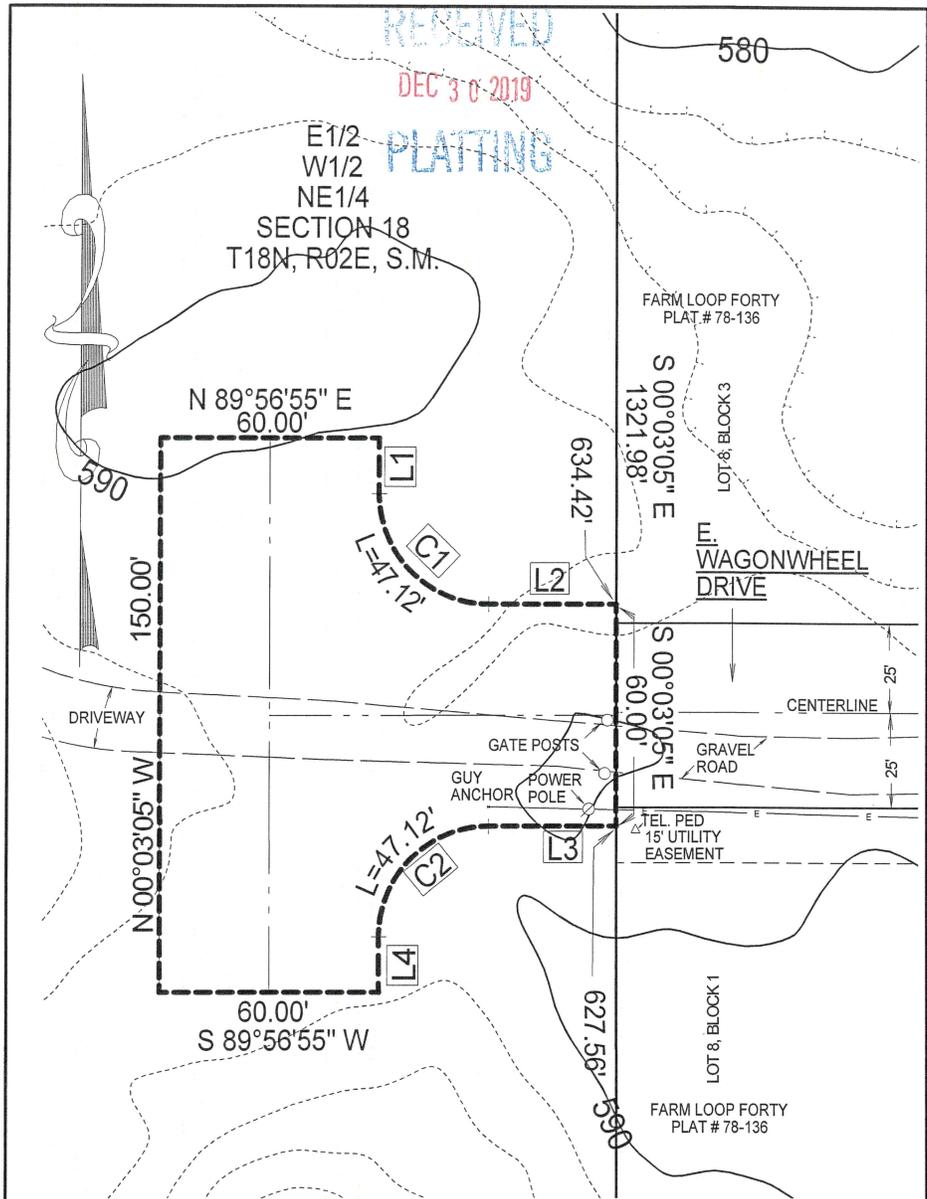
Reggie Anne K. Ostermiller
APPLICANT/OWNER OF PROPERTY
Reggie Anne K Ostermiller

THIS AREA TO BE COMPLETED BY THE MATANUSKA-SUSITNA BOROUGH

Date: _____

PLATTING DIVISION REPRESENTATIVE

SCHEDULED FOR PLATTING BOARD MEETING OF: _____



MAP SHOWING TOPOGRAPHY OF PUE AREA.
AN MSB STANDARD TEE TURN-AROUND IS
CONSTRUCTABLE IN THIS LOCATION.

CONTOUR INTERVAL = 2'

CURVE TABLE						
Id	Delta	Radius	Arc Length	Tangent	Chord	Ch Bear
C1	90°00'00"	30.00'	47.12'	30.00'	42.43'	S 45°03'05" E
C2	90°00'00"	30.00'	47.12'	30.00'	42.43'	S 44°56'55" W

LINE TABLE		
Id	Bearing	Distance
L1	S 00°03'05" E	15.00'
L2	N 89°56'55" E	35.00'
L3	S 89°56'55" W	35.00'
L4	S 00°03'05" E	15.00'

**OSTERMILLER
PUBLIC USE EASEMENT**

SCALE: 1" = 40'



Tax ID:

PUBLIC USE EASEMENT

THIS AGREEMENT, made this 17 day of Dec, 2019, by and between, Lanka Estates LLC, whose address is 11691 Wagonwheel Dr., hereinafter called the GRANTORS, and the MATANUSKA-SUSITNA BOROUGH, a Municipal Corporation organized and existing under the laws of the State of Alaska, whose mailing address is 350 E. Dahlia Avenue, Palmer, AK 99645, hereinafter called the GRANTEE,

WITNESSETH:

That for and inconsideration of \$10.00 (Ten Dollars), and other good and valuable consideration, the receipt of which is hereby acknowledged, the GRANTORS do hereby grant, bargain, sell, convey and warrant to the GRANTEE, its successors and assigns forever, a right-of-way and easement, with the right, privilege and authority to the GRANTEE, its successors and assigns, for use as a public right-of-way, including the right to construct, operate and maintain public improvements of all types within said right-of-way, and to grant encroachment permits and grant public utilities and other utilities the right to place their facilities within said right-of-way, situated in the Palmer Recording District, State of Alaska, described as follows:

A Public Use Easement containing 13,286 square feet within E ½ W ½ NE ¼, Section 18, Township 18 North, Range 02 East, Seward Meridian, Alaska, Palmer Recording District, said easement being described on the attached EXHIBIT "A".

In witness whereof, the GRANTORS have hereunto set their hands and seals the day and year first above written.

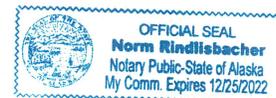
GRANTOR: [Signature] GRANTOR: [Signature]
Name Name

GRANTOR ACKNOWLEDGMENT

STATE OF ALASKA)
)ss
THIRD JUDICIAL DISTRICT)

On the 17 day of December, 2020, George S Ostermiller & Reggie-Annek Ostermiller personally appeared before me, a Notary Public in and of Alaska, and they acknowledged that they signed the foregoing instrument as a free and voluntary act and deed for the uses and purposes therein mentioned.

[Signature]
Notary Public.



THIS PUBLIC USE EASEMENT is accepted by the Matanuska-Susitna Borough for the uses and purposes set out herein; provided, however, such acceptance does not obligate the Matanuska-Susitna Borough to open said right-of-way nor to construct or maintain any public improvements therein.

Borough Manager

STATE OF ALASKA)
)ss
)

THIS IS TO CERTIFY, that on this ____ day of _____, 2020, before me, the undersigned, a Notary Public in and of Alaska, duly commissioned and sworn, personally appeared John Moosey, to me known to be the individual described in and who executed the acceptance of the foregoing PUBLIC USE EASEMENT as manager of the Matanuska-Susitna Borough, a municipal corporation, and he acknowledged to me that he signed the same for and on behalf of said corporation, freely and voluntarily and by authority of its Assembly for the uses and purposes therein mentioned.

NOTARY PUBLIC
My Commission Expires _____

Return to: MSB
 350 E. Dahlia Avenue
 Palmer, AK 99645

EXHIBIT "A"

OSTERMILLER

PUBLIC USE EASEMENT

WITHIN

E ½ W ½ NE ¼, SECTION 18

TOWNSHIP 18 NORTH, RANGE 02 EAST, SEWARD MERIDIAN, ALASKA

Commencing at the C-E 1/16TH corner of said Section 18;

thence N 00°03'05" W along the north – south 1/16th line and the westerly boundary of Farm Loop Forty recorded as Plat # 78-136, a distance of 627.56' to the POINT OF BEGINNING;

thence S 89°56'55" W, a distance of 35.00' to the point of curvature of a tangent curve, concave to the southeast, having a radius of 30.00' and a central angle of 90°00'00";

thence Southwesterly along said curve, a distance of 47.12' curving to the left;

thence S 00°03'05" E, a distance of 15.00';

thence S 89°56'55" W, a distance of 60.00';

thence N 00°03'05" W, a distance of 150.00';

thence N 89°56'55" E, a distance of 60.00' ;

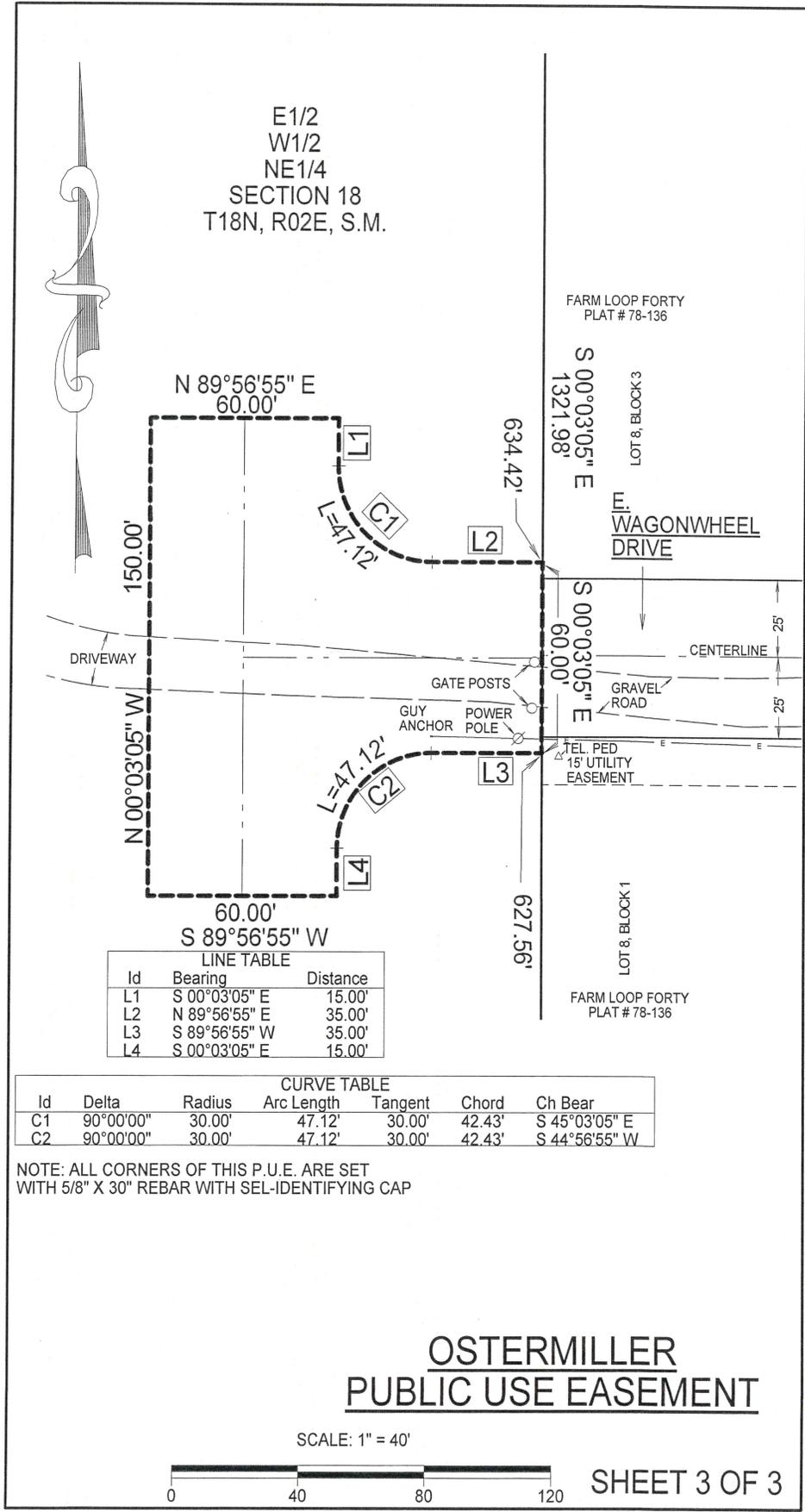
thence S 00°03'05" E, a distance of 15.00' to the point of curvature of a tangent curve, concave to the northeast, having a radius of 30.00' and a central angle of 90°00'00";

thence Southeasterly along said curve, a distance of 47.12' curving to the left;

thence N 89°56'55" E, a distance of 35.00' to said north – south 1/16th line and the westerly line of said Farm Loop Forty;

thence S 00°03'05" E along said north – south 1/16th line and the westerly line of said Farm Loop Forty, a distance of 60.00' to the POINT OF BEGINNING; said described tract containing 13,286 square feet, more or less.





E1/2
W1/2
NE1/4
SECTION 18
T18N, R02E, S.M.

FARM LOOP FORTY
PLAT # 78-136

S 00°03'05" E
1321.98'

LOT 8, BLOCK 3

WAGONWHEEL
DRIVE

S 00°03'05" E
60.00'

CENTERLINE
25'
25'

TEL. PED
15' UTILITY
EASEMENT

LOT 8, BLOCK 1

FARM LOOP FORTY
PLAT # 78-136

634.42'

627.56'

N 89°56'55" E
60.00'

150.00'

DRIVEWAY

N 00°03'05" W

60.00'
S 89°56'55" W

LINE TABLE		
Id	Bearing	Distance
L1	S 00°03'05" E	15.00'
L2	N 89°56'55" E	35.00'
L3	S 89°56'55" W	35.00'
L4	S 00°03'05" E	15.00'

CURVE TABLE						
Id	Delta	Radius	Arc Length	Tangent	Chord	Ch Bear
C1	90°00'00"	30.00'	47.12'	30.00'	42.43'	S 45°03'05" E
C2	90°00'00"	30.00'	47.12'	30.00'	42.43'	S 44°56'55" W

NOTE: ALL CORNERS OF THIS P.U.E. ARE SET
WITH 5/8" X 30" REBAR WITH SEL-IDENTIFYING CAP

**OSTERMILLER
PUBLIC USE EASEMENT**

SCALE: 1" = 40'



SHEET 3 OF 3

Amy Otto-Buchanan

From: Jamie Taylor
Sent: Monday, February 3, 2020 1:24 PM
To: Amy Otto-Buchanan
Subject: RE: RFC Ostermiller PUE

Remove gate from proposed PUE prior to recording, or obtain ROW encroachment permit.

Jamie Taylor, PE
Civil Engineer
Matanuska-Susitna Borough
Department of Public Works
Operations & Maintenance
t: 907-861-7765 c: 907-355-9810
jamie.taylor@matsugov.us
<http://www.matsugov.us/>

From: Amy Otto-Buchanan <Amy.Otto-Buchanan@matsugov.us>
Sent: Thursday, January 2, 2020 4:36 PM
To: Dubour, Adam J (DFG) <adam.dubour@alaska.gov>; regpagemaster@usace.army.mil; brian.young@usps.gov; farmloopak@gmail.com; retirees@mtaonline.net; John Aschenbrenner <John.Aschenbrenner@matsugov.us>; tim.hale@matsugov.us; Fire Code <Fire.Code@matsugov.us>; Jill Irsik <Jill.Irsik@matsugov.us>; Eric Phillips <Eric.Phillips@matsugov.us>; Jude Bilafer <Jude.Bilafer@matsugov.us>; Cindy Corey <Cindy.Corey@matsugov.us>; Terry Dolan <Terry.Dolan@matsugov.us>; Jim Jenson <James.Jenson@matsugov.us>; Jamie Taylor <Jamie.Taylor@matsugov.us>; Charlyn Spannagel <Charlyn.Spannagel@matsugov.us>; Joseph Metzger <Joseph.Metzger@matsugov.us>; Planning <MSB.Planning@matsugov.us>; Eileen Probasco <Eileen.Probasco@matsugov.us>; Fred Wagner <Frederic.Wagner@matsugov.us>; Permit Center <Permit.Center@matsugov.us>; Alex Strawn <Alex.Strawn@matsugov.us>; Theresa Taranto <Theresa.Taranto@matsugov.us>; Andy Dean <Andy.Dean@matsugov.us>; mearow@matanuska.com; row@mtasolutions.com; andrew.fraiser@enstarnaturalgas.com; Cassie Acres <Cassie.Acres@enstarnaturalgas.com>; row@enstarnaturalgas.com; OSP Design Group <ospdesign@gci.com>
Subject: RFC Ostermiller PUE

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Amy Otto-Buchanan
Platting Technician
amy.otto-buchanan@matsugov.us
861-7872

Amy Otto-Buchanan

From: Permit Center
Sent: Tuesday, January 7, 2020 9:04 AM
To: Amy Otto-Buchanan
Subject: RE: RFC Ostermiller PUE

The existing access onto Wagonwheel Drive requires an MSB driveway permit.

From: Amy Otto-Buchanan <Amy.Otto-Buchanan@matsugov.us>
Sent: Thursday, January 2, 2020 4:36 PM
To: Dubour, Adam J (DFG) <adam.dubour@alaska.gov>; regpagemaster@usace.army.mil; brian.young@usps.gov; farmloopak@gmail.com; retirees@mtaonline.net; John Aschenbrenner <John.Aschenbrenner@matsugov.us>; tim.hale@matsugov.us; Fire Code <Fire.Code@matsugov.us>; Jill Irsik <Jill.Irsik@matsugov.us>; Eric Phillips <Eric.Phillips@matsugov.us>; Jude Bilafer <Jude.Bilafer@matsugov.us>; Cindy Corey <Cindy.Corey@matsugov.us>; Terry Dolan <Terry.Dolan@matsugov.us>; Jim Jenson <James.Jenson@matsugov.us>; Jamie Taylor <Jamie.Taylor@matsugov.us>; Charlyn Spannagel <Charlyn.Spannagel@matsugov.us>; Joseph Metzger <Joseph.Metzger@matsugov.us>; Planning <MSB.Planning@matsugov.us>; Eileen Probasco <Eileen.Probasco@matsugov.us>; Fred Wagner <Frederic.Wagner@matsugov.us>; Permit Center <Permit.Center@matsugov.us>; Alex Strawn <Alex.Strawn@matsugov.us>; Theresa Taranto <Theresa.Taranto@matsugov.us>; Andy Dean <Andy.Dean@matsugov.us>; mearow@matanuska.com; row@mtasolutions.com; andrew.fraiser@enstarnaturalgas.com; Cassie Acres <Cassie.Acres@enstarnaturalgas.com>; row@enstarnaturalgas.com; OSP Design Group <ospdesign@gci.com>
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Amy Otto-Buchanan
Platting Technician
amy.otto-buchanan@matsugov.us
861-7872

Amy Otto-Buchanan

From: Andy Dean
Sent: Friday, January 3, 2020 9:12 AM
To: Amy Otto-Buchanan
Cc: Alex Strawn
Subject: RE: RFC Ostermiller PUE

Hello Amy

Before dedication and acceptance, the gate and gate posts are to be removed and relocated to outside of the proposed PUE.

Sincerely,



From: Amy Otto-Buchanan <Amy.Otto-Buchanan@matsugov.us>
Sent: Thursday, January 2, 2020 4:36 PM
To: Dubour, Adam J (DFG) <adam.dubour@alaska.gov>; regpagemaster@usace.army.mil; brian.young@usps.gov; farmloopak@gmail.com; retirees@mtaonline.net; John Aschenbrenner <John.Aschenbrenner@matsugov.us>; tim.hale@matsugov.us; Fire Code <Fire.Code@matsugov.us>; Jill Irsik <Jill.Irsik@matsugov.us>; Eric Phillips <Eric.Phillips@matsugov.us>; Jude Bilafer <Jude.Bilafer@matsugov.us>; Cindy Corey <Cindy.Corey@matsugov.us>; Terry Dolan <Terry.Dolan@matsugov.us>; Jim Jenson <James.Jenson@matsugov.us>; Jamie Taylor <Jamie.Taylor@matsugov.us>; Charlyn Spannagel <Charlyn.Spannagel@matsugov.us>; Joseph Metzger <Joseph.Metzger@matsugov.us>; Planning <MSB.Planning@matsugov.us>; Eileen Probasco <Eileen.Probasco@matsugov.us>; Fred Wagner <Frederic.Wagner@matsugov.us>; Permit Center <Permit.Center@matsugov.us>; Alex Strawn <Alex.Strawn@matsugov.us>; Theresa Taranto <Theresa.Taranto@matsugov.us>; Andy Dean <Andy.Dean@matsugov.us>; mearow@matanuska.com; row@mtasolutions.com; andrew.fraiser@enstarnaturalgas.com; Cassie Acres <Cassie.Acres@enstarnaturalgas.com>; row@enstarnaturalgas.com; OSP Design Group <ospdesign@gci.com>
Subject: RFC Ostermiller PUE

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Amy Otto-Buchanan
Platting Technician
amy.otto-buchanan@matsugov.us
861-7872



ENSTAR Natural Gas Company
A DIVISION OF SEMCO ENERGY
Engineering Department, Right of Way Section
401 E. International Airport Road
P. O. Box 190288
Anchorage, Alaska 99519-0288
(907) 277-5551
FAX (907) 334-7798

January 16, 2020

Amy Otto-Buchanan
Platting Technician
Matanuska-Susitna Borough, Platting Division
350 East Dahlia Avenue
Palmer, AK 99645-6488

Dear Ms. Otto-Buchanan:

ENSTAR Natural Gas Company has reviewed **Deland Estates (MSB Case # 2020-001)** and advises that there is an existing natural gas service line which appear to cross proposed Lot 6A to serve proposed Lot 6B. Attached is an approximate ENSTAR as-built for your reference. ENSTAR objects to this plat unless one of the following scenarios is met:

1. Add a ten foot (10 FT) wide natural gas easement, centered on the existing natural gas service line as they cross Lot 6A to serve Lot 6B.
2. Add a note which says, "There is a ten foot (10 FT) wide natural gas easement centered on the existing service line." And draw in the approximate location of the service line on the map and add, "Approximate location of natural gas service line and centerline of ten foot (10 FT) wide natural gas easement".
3. Owner signs an ENSTAR Natural Gas Easement document for a ten foot (10 FT) wide natural gas easement, centered on the service line at this location.

ENSTAR Natural Gas Company has reviewed **Ostermiller PUE (MSB Case # 2020-003)** and advises that there is an existing natural gas line with a fifteen foot (15 FT) wide natural gas easement centered on the line according to recording number 2014-014677-0. Attached is an approximate ENSTAR as-built for your reference. ENSTAR objects to this plat unless one of the scenarios is met:

1. The natural gas line is located and surveyed and add a note which says, "Surveyed location of natural gas line and centerline of fifteen foot (15 FT) wide natural gas easement" and draw in the surveyed location of the line on the map.
4. Add a note which says, "There is a fifteen foot (15 FT) wide natural gas easement centered on the existing natural gas line." And draw in the approximate location of the line on the map and add, "Approximate location of natural gas line and centerline of fifteen foot (15 FT) wide natural gas easement".

ENSTAR Natural gas company has reviewed the following Abbreviated plats and has no comments or recommendations.

- **Eldridge Subdivision**
(MSB Case # 2020-002)
- **Taylor Pond**
(MSB Case # 2019-188)

EXHIBIT G -/



ENSTAR Natural Gas Company
A DIVISION OF SEMCO ENERGY
Engineering Department, Right of Way Section
401 E. International Airport Road
P. O. Box 190288
Anchorage, Alaska 99519-0288
(907) 277-5551
FAX (907) 334-7798

If you have any questions, or if this line is or is going to be abandoned, please feel free to contact me at 334-7944 or by email at cassie.acres@enstarnaturalgas.com.

Sincerely,

A handwritten signature in blue ink that reads "Cassie Acres". The signature is written in a cursive, flowing style.

Cassie Acres
Right-of-Way and Compliance Technician
ENSTAR Natural Gas Company

EXHIBIT G-3

ENSTAR 1/16/2020

M Ostermiller PUE

MSB # 2020-003



NE4713

T 18 N
R 2 E

18

Approximate location →
of the natural gas line
and the 15FT Natural gas
easement

11691

WAGONWHEEL DR

E Wagonwheel Dr

E Weatherlane Circle

11701

11780

11800

11700

11875

11795

11750



Amy Otto-Buchanan

From: Holly Sparrow <hsparrow@mtasolutions.com>
Sent: Monday, January 13, 2020 9:01 AM
To: Amy Otto-Buchanan
Subject: FW: RFC Ostermiller PUE
Attachments: RFC Packet.pdf; PUE Document.pdf; Feasibility of Construction.pdf

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

Good Morning,

MTA has reviewed the PUE for Ostermiller. MTA has a drop telecommunications service to a customer within the proposed Public Use Easement. MTA will need to know how this will be affected by the construction of the T-turnaround.

Thank you for the opportunity to comment.

Holly Sparrow, Right of Way Agent

MTA | 1740 S. Chugach Street | Palmer, Alaska 99645
office: 907-761-2599 | www.mtasolutions.com



Life. Technology. Together.

From: Amy Otto-Buchanan <Amy.Otto-Buchanan@matsugov.us>
Sent: Thursday, January 2, 2020 4:36 PM
To: Dubour, Adam J (DFG) <adam.dubour@alaska.gov>; regpagemaster@usace.army.mil; brian.young@usps.gov; farmloopak@gmail.com; retirees@mtaonline.net; John Aschenbrenner <John.Aschenbrenner@matsugov.us>; tim.hale@matsugov.us; Fire Code <Fire.Code@matsugov.us>; Jill Irsik <Jill.Irsik@matsugov.us>; Eric Phillips <Eric.Phillips@matsugov.us>; Jude Bilafer <Jude.Bilafer@matsugov.us>; Cindy Corey <Cindy.Corey@matsugov.us>; Terry Dolan <Terry.Dolan@matsugov.us>; Jim Jenson <James.Jenson@matsugov.us>; Jamie Taylor <Jamie.Taylor@matsugov.us>; Charlyn Spannagel <Charlyn.Spannagel@matsugov.us>; Joseph Metzger <Joseph.Metzger@matsugov.us>; Planning <MSB.Planning@matsugov.us>; Eileen Probasco <Eileen.Probasco@matsugov.us>; Fred Wagner <Frederic.Wagner@matsugov.us>; Permit Center <Permit.Center@matsugov.us>; Alex Strawn <Alex.Strawn@matsugov.us>; Theresa Taranto <Theresa.Taranto@matsugov.us>; Andy Dean <Andy.Dean@matsugov.us>; mearow@matanuska.com; Right of Way Dept. <row@mtasolutions.com>; andrew.fraiser@enstarnaturalgas.com; Cassie Acres <Cassie.Acres@enstarnaturalgas.com>; row@enstarnaturalgas.com; OSP Design Group <ospdesign@gci.com>
Subject: RFC Ostermiller PUE

Amy Otto-Buchanan

From: OSP Design Group <ospdesign@gci.com>
Sent: Friday, January 17, 2020 12:13 PM
To: Amy Otto-Buchanan
Subject: RE: RFC Ostermiller PUE
Attachments: Feasibility of Construction (002).pdf

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

Hello,

There are no objections to this plat.

Thank you,

JACQUELINE HALL

GCI | Technician I, GIS Mapping

w: www.gci.com

From: Amy Otto-Buchanan <Amy.Otto-Buchanan@matsugov.us>

Sent: Thursday, January 2, 2020 4:36 PM

To: Dubour, Adam J (DFG) <adam.dubour@alaska.gov>; regpagemaster@usace.army.mil; brian.young@usps.gov; farmloopak@gmail.com; retirees@mtaonline.net; John Aschenbrenner <John.Aschenbrenner@matsugov.us>; tim.hale@matsugov.us; Fire Code <Fire.Code@matsugov.us>; Jill Irsik <Jill.Irsik@matsugov.us>; Eric Phillips <Eric.Phillips@matsugov.us>; Jude Bilafer <Jude.Bilafer@matsugov.us>; Cindy Corey <Cindy.Corey@matsugov.us>; Terry Dolan <Terry.Dolan@matsugov.us>; Jim Jenson <James.Jenson@matsugov.us>; Jamie Taylor <Jamie.Taylor@matsugov.us>; Charlyn Spannagel <Charlyn.Spannagel@matsugov.us>; Joseph Metzger <Joseph.Metzger@matsugov.us>; Planning <MSB.Planning@matsugov.us>; Eileen Probasco <Eileen.Probasco@matsugov.us>; Fred Wagner <Frederic.Wagner@matsugov.us>; Permit Center <Permit.Center@matsugov.us>; Alex Strawn <Alex.Strawn@matsugov.us>; Theresa Taranto <Theresa.Taranto@matsugov.us>; Andy Dean <Andy.Dean@matsugov.us>; mearow@matanuska.com; row@mtasolutions.com; andrew.fraiser@enstarnaturalgas.com; Cassie Acres <Cassie.Acres@enstarnaturalgas.com>; row@enstarnaturalgas.com; OSP Design Group <ospdesign@gci.com>

Subject: RFC Ostermiller PUE

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

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Amy Otto-Buchanan
Platting Technician
amy.otto-buchanan@matsugov.us
861-7872

**MATANUSKA-SUSITNA BOROUGH
PLATTING DIVISION**
350 EAST DAHLIA AVENUE
PALMER, ALASKA 99645



ZIP 99645 \$ 000.50⁰
02 4W
0000368428 JAN 29 2020

RECEIVED

FEB 0 5 2020

51537B01L002 28
POLOWY JOSEPH S SR & GEORGIA A
PO BOX 2183
PALMER AK 99645

PLATTING

FIRST CLASS

NOTIFICATION OF PUBLIC HEARING



The Matanuska-Susitna Borough **Platting Board** will consider the following:

PETITIONER/OWNER: LANIKAI ESTATES LLC

REQUEST: The request is create a t-turnaround Public Use Easement at the western terminus of E. Wagonwheel Drive, in Tax Parcel A7, to be known as **OSTERMILLER PUE**, containing 13,286 sf +/- . The proposed Public Use Easement is located west of E. Wagonwheel Drive, parcel is located west of N. Britchenstrap Drive and north of N. Farm Loop, (Tax ID #118N02E18A007); within the E 1/2 W 1/2 NE 1/4 Section 18, Township 18 North, Range 02 East, Seward Meridian. Community Council Farm Loop and in Assembly District #1 Tim Hale

The Matanuska-Susitna Borough **Platting Board** will hold a public hearing in **Assembly Chambers** of the **Dorothy Swanda Jones Building**, 350 E. Dahlia Avenue, Palmer, Alaska on the proposed **Public Use Easement** on **February 20, 2020**. The meeting begins at **1:00 p.m.** We are sending you this notice as required by State Law and Borough Ordinances.

For comments regarding the proposed action, this form may be used for your convenience by filling in the information below and mail this notice to the MSB Platting Division, 350 E. Dahlia, Palmer, Alaska 99645 or e-mail: platting@matsugov.us. Comments received from the public after the platting board packet has been written and sent to the board will be given to the Platting Board in a "Hand-Out" the day of the meeting. To request additional information please contact the Platting Technician, **Amy Otto-Buchanan** at (907) 861-7872 or the Platting Secretary at (907) 861-8573.

In order to be eligible to file an appeal from a decision of the Platting Board, a person must be designated an *interested party*. See MS. 15.39.010 for definition of "Interested Party". The procedures governing appeals to the Board of Adjustment & Appeals are contained in MSB 15.39.010-250, which is available on the Borough internet home page, (www.matsugov.us), in the Borough Clerk's office, or at various libraries within the borough.

Please do not send comments or questions directly to the Platting Board members. Board members may not receive or engage in ex-parte contact with the applicant, other parties interested in the application, or members of the public concerning the application or issues presented in the application.

[] No Objection Objection Concern

Name: JOSEPH S. Polowy SR. Address: 11960 E. WEATHERVANE CIRCLE, PALMER, AK. 99645

Comments: REDUCTION OF WATER TABLE, MORE FAST HEAVY TRAFFIC IN RESIDENTIAL AREA, AND THE REFUSAL OF MATSU BOROUGH TO PUT IN SPEED HUMPS TO PROTECT RESIDENTS (ESPECIALLY CHILDREN) BECAUSE SNOW PLOWERS AND DELIVERY DRIVERS CUPS-FED-EX) DON'T LIKE THEM.

Case # 2020-003 AOB

Note: Vicinity map Located on Reverse Side

EXHIBIT H

6B

**STAFF REVIEW AND RECOMMENDATIONS
PUBLIC HEARING
FEBRUARY 20, 2020**

PRELIMINARY PLAT: **GOODWIN ESTATES MASTER PLAN**

LEGAL DESCRIPTION: **SEC 10, T18N, R1E, SEWARD MERIDIAN, AK**

PETITIONER: **MARY SUSANNE GOODWIN**

SURVEYOR/ENGINEER: **HANSON LAND SOLUTIONS/HOLLER ENGINEERING**

ACRES: **80.04** **PARCELS: 57**

REVIEWED BY: **PEGGY HORTON** **CASE: 2020-005**

REQUEST

The request is to create a 58-lot, 2-phase master plan known as GOODWIN ESTATES, containing 80 acres +/- . The property is located west of N. Palmer-Fishhook Road and directly north of E. Tex-Al Drive (Tax ID #18N01E10C007 & 18N01E10D006); within the S½ Section 10, Township 18 North, Range 01 East, Seward Meridian, Alaska.

EXHIBITS:

Vicinity Maps	EXHIBIT A
Plat w/phase line	EXHIBIT B
Surveyor’s Letter	EXHIBIT C
Topographic Map	EXHIBIT D
As-Built Information	EXHIBIT E
Aerial Image	EXHIBIT F
Engineer’s Report	EXHIBIT G
Road Plan & Profile	EXHIBIT H
Drainage Plan	EXHIBIT I
Tex-Al Plan & Profile	EXHIBIT J

COMMENTS:

MEA	EXHIBIT K
MTA	EXHIBIT L
Dept. of Public Works	EXHIBIT M

DISCUSSION:

This is a two-phase Master Plan; the phase line is at the toe of a very steep bluff (**Exhibit B**). Hanson Land Solutions (HLS) submitted a letter providing information based on the response to the preliminary design (**Exhibit C**). The letter provides reasons for the design of the roads enabling Department of Public Works (DPW) Engineer to approve a centerline radius of less than 350 ft. With DPW approval, the centerline radius on a residential subcollector can be a

minimum 275 ft. according to the Subdivision Construction Manual A05.5(c). The intersection with Tex-Al Dr. was moved west to improve sight distance. Intersection angle of Yarn Spinner Circle and Windy Woods Farm Loop was improved. HLS added a stub road (Corgi Rd.) out to adjacent Tax Parcel C6 to provide a suitable tie-in enabling a second connection to Tex-Al in a constructible area and break up the block length on Rockysue Loop.

Lot and Block Design: The lots range in size from 0.92 acres to 3.01 acres. The subdivision lot design meets the standards in MSB 43.20.300. Each lot has a minimum of 60' of road frontage, or 45' when on a cul-de-sac.

MSB 43.05.005 defines Block as “a group of lots existing within well-defined and fixed boundaries being an area surrounded by streets or other physical barriers and having an assigned number, letter, or other name by which it may be identified.” MSB 43.20.300(A) states “The length of a block shall be not less than 400 feet, no more than 3,000 feet...” A note on the plat explains that a natural physical barrier running the length of this site in part dictates block delineation for this subdivision. The provided topographic map graphically depicts this physical barrier (**Exhibit D**). This barrier forms a natural distinction between the upper and lower regions of the subdivision and the block numbers will reflect this. W. Corgi Road breaks up the block length on the outside of the loop.

As-built Info: HLS provided as-built information within and outside the boundary as required by MSB 43.15.016 (**Exhibit E**). The as-built information shows the five wells drilled on the property, the existing traveled way along Tex-Al, and a pole barn within proposed Tract A. Much of the original parcel remains relatively undisturbed, with the exception of the previously cleared field areas being overgrown with sparse young birch trees, spruce trees, and grasses as shown on the aerial photo (**Exhibit F**).

Useable Area: The engineer's report provided by Holler Engineering states the evaluation included logging 38 new test holes, review of the provided topography information, review of aerial imagery, review of surrounding testhole information, and other observations at the site (**Exhibit G**). Test holes were dug in dry weather beginning on November 4, 2019 so groundwater levels in those test holes where water was encountered will need to be monitored at times between the months of May and October to comply with MSB 43.20.281(A)(1)(d) (**Recommendation #4**).

For most of the proposed lots, adequate unencumbered area exists to readily meet the code requirements. Based on the available soils and water table information, topography, MSB Title 43 Code definitions, and observations at the site, proposed lots as temporarily numbered 1-12, 17-51, 53-57 and Tract A will each contain over 10,000 square feet of contiguous useable septic area, and an additional 10,000 square feet of useable building area. Lots 13-16 and Lot 52 can reasonably be regraded or have their groundwater table permanently lowered to create useable septic area, or a combination of both methods. He suggested verification of this work and final assessment of useable areas by a professional engineer should be made a condition of approval for the master plan, to be completed prior to recording the phase

including those five lots (**Recommendation #5**). Alternately, the lots could be absorbed into an adjacent, conforming lot by removal of the appropriate common lotline or lotlines.

Access: The borough maintains E. Tex-Al Drive up to the entrance to Trinity View, which is east of this project. Construction of this subdivision will require a 1000-foot extension of E. Tex-Al Drive to just past E. Windy Woods Farm Drive entrance to residential collector standard. This will involve the reconstruction of an existing driveway to the Goodwin property to the south (**Recommendation #7**). Construction of E. Windy Woods Farm Drive and E. Rockysue Loop will be to residential subcollector and E. Yarn Spinner Circle and S. Goodwin Circle will be constructed to residential standard minimum (**Recommendation #9**). W. Corgi Road and N. Aussie Dog Road are stub roads and do not require construction. HLS provided road plan & profile for these internal roads (**Exhibit H**).

Drainage: Holler Engineering provided a revised drainage plan dated February 6, 2020, after a meeting with Capital Projects Department (CPD), DPW, Platting Staff, the developer, and surveyor (**Exhibit I**). The revision involved drainage along the extension of E. Tex-Al Drive. Because of right-of-way easement negotiations with the property to the south, the engineer removed the proposed culvert east of the entrance road to this project and added an infiltration point on the north side, within the right-of-way.

For the remaining part of the subdivision, the engineer shows proposed culverts and infiltration points as well as the general drainage patterns. The preconstruction meeting held with DPW prior to road construction will go over the possibility of slope easements, measures necessary for erosion protection within the steep areas, and road construction requirements. As always, the drainage plan is subject to field modification and improvement during the road construction work.

COMMENTS:

Borough: The developer, their surveyor, Platting staff and DPW met January 15, 2020 and resolved several concerns with the original plat. The surveyor provided a redesigned plat, which is what you have today. The developer, their engineer and surveyor, CPD personnel, DPW, and Platting Staff met on February 6, 2020 and resolved drainage and road construction requirements as it relates to CPD's Tex-Al Drive project.

The CPD project to connect the two ends of Tex-Al Drive will provide a much-needed connection from N. Palmer-Fishhook to N. Wasilla-Fishhook. CRW Engineering Group provided a 65% draft plan & profile for this project to connect the two ends of Tex-Al Drive. (**Exhibit J**).

DPW approved the less than 350' radii horizontal curves due to the site constraints as stated in the surveyor's letter (**Exhibit M**). SCM A05.5f) requires maximum grade of 7% within 50 feet of an intersection on the through road. She requests this be checked at the intersection of the two stub roads with the loop road.

DPW expressed a verbal concern that any slope maintenance easements adjoin the public rights-of-way (**Recommendation #6**). DPW is also concerned additional measures need to be taken to slow water down permanently on the two large hills and will discuss those measures at the pre-construction meeting.

Utilities: MEA requests a 15' wide utility easement along the north side of E. Tex-Al Dr. Right of Way (**Exhibit K**). They also said there is an underground line running perpendicular through the subdivision as shown on the MEA map included. MEA request this line be located and a 20' easement centered on the existing line shown on the plat to ensure proper notification to property owners (**Recommendation #4**).

MTA has no comments (**Exhibit L**).

CONCLUSION:

The preliminary plat for Goodwin Estates Master Plan is consistent with AS 29.40.070 Platting Regulations and MSB 43.15.016 Preliminary Plat Submittal and Approval. This 58-lot, 2-phase master plan has a significant bluff that divides the north part of the property from the south.

A professional engineer stated that the majority the proposed lots contain the required useable septic and useable building area. The other five lots will have adequate useable area created as a condition of approval. There were discussions between DPW, Platting Staff, CPD, and the developer's representatives, concerning road design and construction, drainage, driveway construction, and useable area, which resulted in satisfaction for all parties involved. There were no objections from borough departments, outside agencies, or the public.

FINDINGS of FACT:

1. The plat of Goodwin Estates Master Plan is consistent with AS 29.40.070 Platting Regulations and MSB 43.15.016 Preliminary Plat Submittal and Approval.
2. The borough maintains E. Tex-Al Drive up to N. Trinity View Drive. E. Tex-Al Drive is classified as a collector and is on the Official Streets and Highways Plan as a future minor collector. No lots should take direct access onto E. Tex-Al Drive.
3. CPD is designing a connection between the two ends of Tex-Al Drive that will provide a much-needed connection from N. Palmer-Fishhook to N. Wasilla-Fishhook. Long Range Transportation Plan lists it as a short-term roadway recommendation; no timeframe is available for this project.
4. DPW approved the centerline radius on E. Windy Woods Farm Drive and E. Rockysue Loop after the surveyor redesigned the plat and provided reasons for the reductions to the minimums listed in the Subdivision Construction Manual.

5. MSB 43.20.300(A) states “The length of a block shall be not less than 400 feet, no more than 3,000 feet...” A natural physical barrier running the length of this site in part dictates Block delineation for this subdivision. This barrier forms a natural distinction between the upper and lower regions of the subdivision and the block numbers will reflect this.
6. MSB 43.20.281(A)(1)(d) requires the engineer to determine the depth to seasonal high water table be monitored between May and October (inclusive). Several test holes located on the higher ground encountered groundwater or seeps at depth of 2’ to 15’.
7. A professional engineer stated useable septic area is available for the majority of the lots. Five lots will need to be regraded or have their groundwater table permanently lowered or be combined with other lots to create useable septic area on those lots in compliance with MSB 43.20.281.
8. Lot sizes and design are consistent MSB 43.20.300(A), *Lot and Block Design*.
9. Frontage to all lots are consistent with MSB 43.20.320, *Frontage*.
10. There are 15’ utility easements shown on the plat along both sides of the proposed internal right-of-ways consistent with the SCM standards for utilities.
11. There were no borough, outside agency, or public objections to this plat.

RECOMMENDATIONS for CONDITIONS OF APPROVAL:

***Recommended motion:* “I move to approve the preliminary plat of Goodwin Estates Master Plan, located within Section 10, Township 18 North, Range 1 East, Seward Meridian, Alaska contingent on the following staff recommendations:”**

1. Submit the mailing and advertising fee.
2. Provide approved road names on final plats in accordance with MSB 43.15.049(D).
3. Provide a plat note that prohibits direct access from any of the lots onto Tex-Al Drive.
4. Provide a 15’ wide utility easement along the north side of E. Tex-Al Dr. and a 20’ wide utility easement centered on the north-south underground MEA facilities as requested by MEA.
5. Provide evidence of seasonal high water table monitoring between May and October, (inclusive) prior to Phase II recording.
6. Provide final assessment of useable septic and useable building area by a civil engineer for Lots 13-16 and 52, prior to Phase II recording.

7. Slope maintenance easements, if used, must adjoin the public rights-of-way.
8. Obtain a driveway permit and reconstruct the existing driveway to the Goodwin property with the construction of Tex-Al Drive.
9. Submit construction cost estimate, schedule pre-construction meeting with Public Works Engineer, pay inspection fee, and obtain Notice to Proceed prior to any road or drainage construction in compliance with SCM, Section E.
10. Construct E. Tex-Al Drive to residential collector standards, E. Windy Woods Farm Drive and E. Rockysue Loop to residential subcollector and E. Yarn Spinner Circle and S. Goodwin Circle to residential standard minimum. No construction is required W. Corgi and N. Aussie Dog Roads.
11. Provide engineer's final inspection report along with verification from an RLS that the constructed roadways are located within the proposed right-of-way per MSB 43.20.140 and obtain Public Works Engineer signoff.
12. Provide updated Certificate to Plat executed within 7 days, prior to recording each phase per MSB 43.15.053(E).
13. Submit an affidavit from any holders of beneficial interest, if any, to be recorded with each phase.
14. Submit recording fee, payable to the State of Alaska, DNR.
15. Pay taxes and special assessments in full through the year of recording, per MSB 43.15.053(F) and AS 40.15.020. Pay taxes and special assessments (LIDs) by certified funds or cash.
16. Submit final phase plats in full compliance with Title 43.

VICINITY MAP

FOR PROPOSED GOODWIN ESTATES
 MASTER PLAN LOCATED WITHIN
 SECTION 10, T18N, R1E
 SEWARD MERIDIAN, ALASKA

WASILLA 1 MAP

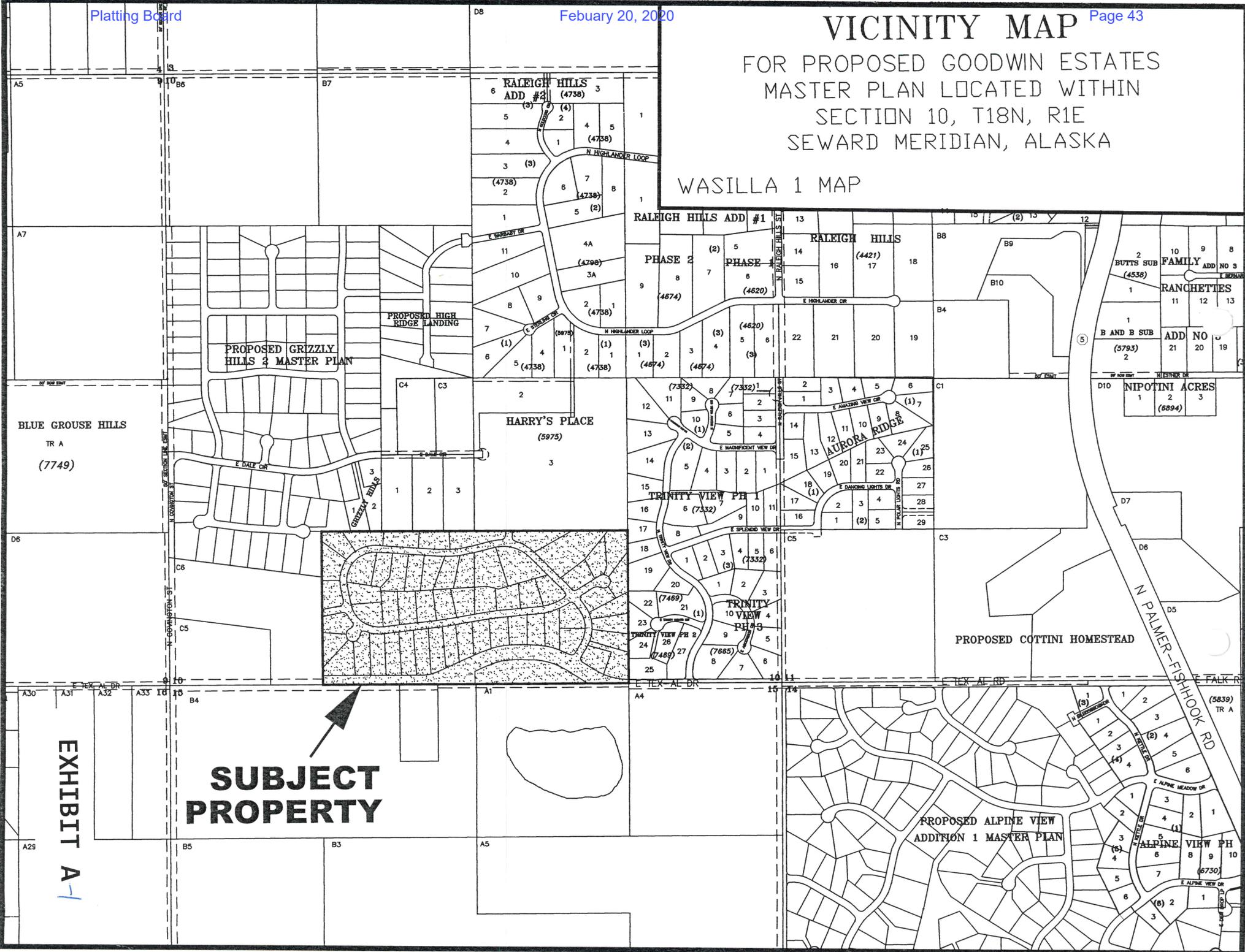


EXHIBIT A-1

PLANNING & LAND USE DIRECTOR'S CERTIFICATE

I CERTIFY THAT THIS SUBDIVISION PLAT HAS BEEN FOUND TO COMPLY WITH THE LAND SUBDIVISION REGULATIONS OF THE MATANUSKA-SUSITNA BOROUGH, AND THAT THE PLAT HAS BEEN APPROVED BY THE PLATTING AUTHORITY BY PLAT RESOLUTION NUMBER DATED 20 AND THAT THIS PLAT HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE RECORDER IN THE PALMER RECORDING DISTRICT, THIRD JUDICIAL DISTRICT, STATE OF ALASKA, IN WHICH THE PLAT IS LOCATED

CERTIFICATE OF PAYMENT OF TAXES

I HEREBY CERTIFY THAT ALL CURRENT TAXES AND SPECIAL ASSESSMENTS, THROUGH 20, AGAINST THE PROPERTY, INCLUDED IN THE SUBDIVISION OR RESUBDIVISION, HEREON HAVE BEEN PAID.

TAX COLLECTION OFFICIAL (MATANUSKA-SUSITNA BOROUGH) DATE

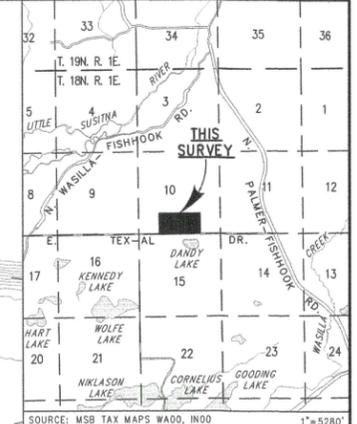
PLANNING AND LAND USE DIRECTOR DATE

ATTEST: (PLATTING CLERK)

HARRY'S PLACE SUBDIVISION (2006-209)

FISHHOOK PLATEAU SUBDIVISION (2012-24)

TRACT A



CERTIFICATE OF OWNERSHIP

WE HEREBY CERTIFY THAT WE ARE THE OWNERS OF THE PROPERTY SHOWN AND DESCRIBED ON THIS PLAN AND THAT WE ADOPT THIS PLAN OF SUBDIVISION BY OUR FREE CONSENT.

MARY SUSANNE GOODWIN DATE 8202 E. TEX-AL DR. PALMER AK 99645-8377

NOTARY ACKNOWLEDGEMENT

SUBSCRIBED AND SWORN BEFORE ME THIS DAY OF 201 FOR

NOTARY FOR THE STATE OF ALASKA MY COMMISSION EXPIRES



I HEREBY CERTIFY THAT I AM A REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF ALASKA, AND THAT THIS PLAT REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT THE MONUMENTS SHOWN ON THE PLAT ACTUALLY EXIST AS DESCRIBED AND THAT ALL DIMENSIONAL AND OTHER DETAILS ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

REGISTERED LAND SURVEYOR A PLAT OF GOODWIN ESTATES

A SUBDIVISION OF PARCELS 1 AND 2, FORTY ACRE EXEMPTION 2011-82-EXM (2011-021123-0) ER RECORDING DISTRICT STATE OF ALASKA LOCATED WITHIN T. 10, T.18N. R.1E. SM, AK 16 80.04 ACRES MORE OR LESS

HANSON LAND SOLUTIONS 305 EAST FIREWEED AVENUE PALMER, ALASKA, 99645 (907)746-7738

- NOTES: 1. ALL DISTANCES SHOWN ARE GROUND DISTANCES. 2. THE BASIS OF BEARING ON THIS PLAT IS TRUE NORTH WITH RESPECT TO THE LONGITUDINAL MERIDIAN THROUGH THE SOUTH 1/4 CORNER OF SECTION 10, A G.L.O. BRASS CAP MONUMENT WITH A NETWORK GNSS GEODETIC POSITION OF 61°39'25.94"N 149°15'15.41"W 3. NO INDIVIDUAL WATER SUPPLY SYSTEM OR SEWAGE DISPOSAL SYSTEM SHALL BE PERMITTED ON ANY LOT UNLESS THE SYSTEM IS LOCATED, CONSTRUCTED, AND EQUIPPED IN ACCORDANCE WITH THE REQUIREMENTS, STANDARDS, AND RECOMMENDATIONS OF THE STATE OF ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION, WHICH GOVERNS THOSE SYSTEMS. 4. THERE MAY BE FEDERAL, STATE, AND LOCAL REQUIREMENTS GOVERNING LAND USE. THE INDIVIDUAL PARCEL OWNER SHALL OBTAIN A DETERMINATION WHETHER THESE REQUIREMENTS APPLY TO THE DEVELOPMENT OF PARCELS SHOWN ON THE PLAT TO BE RECORDED. 5. THIS SUBDIVISION IS SUBJECT TO M.E.A. BLANKET EASEMENTS RECORDED ON MAY 18, 2011 IN DOCUMENT #2011-009348-0 AND ON AUGUST 31, 2011 IN DOCUMENT #2011-016813-0, PALMER RECORDING DISTRICT.



- LEGEND: RECOVERED 2 1/2" GLO BRASS CAP, RECOVERED 3/4" ALUMINUM MONUMENT, RECOVERED 2" ALUMINUM MONUMENT, SET PLASTIC CAP ON 3/8" REBAR, MEASURED DATA, RECORD PER PLAT (2006-209), RECORD PER PLAT (2012-24), RECORD PER PLAT (2014-99), RECORD PER RECORD OF SURVEY (96-67)

EXHIBIT B

HANSON LAND SOLUTIONS
SURVEYING, ENGINEERING & LAND DEVELOPMENT SERVICES
305 E. FIREWEED AVE. PALMER, AK 99645



RECEIVED
JAN 17 2020
PLATTING

January 17, 2020

Matanuska-Susitna Borough
Planning and Land Use Department
Platting Division
Attention Fred Wagner, Peggy Horton
350 E. Dahlia Avenue Palmer, Alaska 99645

In support of the subdivision action for Goodwin Estates, and in response to preliminary comments, we will be submitting a revised plat today. The following notes provide pertinent information relevant to the submittal:

- We have moved our Tex-AI access intersection approximately 100' west to improve sight distances
- A 290' curve (less than the 350' standard for residential subcollector but more than the minimum required with DPW approval) was needed directly north of this new Tex-AI intersection to ensure good alignment with the designed area of steep hill ascent to the north.
- The intersection of Yarn Spinner Circle and Windy Woods Farms has been improved by making minor adjustments that brought the roads closer to 90 degrees at their intersection.
- The curve at N. Aussie Dog Circle has been increased to a 350' radius, enabled by late design changes to the lot configuration
- The 2 Westerly curves Of Rocky Sue Loop are less than the standard 350' radius due to terrain constraints...the upper curve utilizes a natural break in an otherwise very steep bluff allowing passage from the upper bench to the lower area while the lower curve radius is needed for a successful realignment between the 2 steep hillsides, north and south of the lower area of development. Integration of these curves enables inter-connectivity of the 2 development areas that are otherwise separated by steep terrain that would precipitate long cul-de-sacs for access.
- Terrain likewise dictated the placement of the westerly access ROW (unconstructed) provided to the adjacent Parcel 4A (currently labelled Corgi Rd): while the northerly of the 2 steep areas running across our project continues on further to the west, the southerly steep area does not and a suitable tie in to Tex-AI could in fact be constructed to the west of our subdivision. This tie-in enables a second connection to Tex-al in a constructible area.
- A note has been placed on the plat explaining how the block numbering will be dictated by the physical barrier of the steep bluff traversing the length of the project.

Respectfully,
Craig Hanson, RLS
Hanson Land Solutions
305 E, Fireweed Ave.
Palmer, AK 99645
(907)746-7738

EXHIBIT C



HANSON LAND SOLUTIONS
305 E. FIREWEED AVE.
PALMER, ALASKA 99645
(907)746-7738

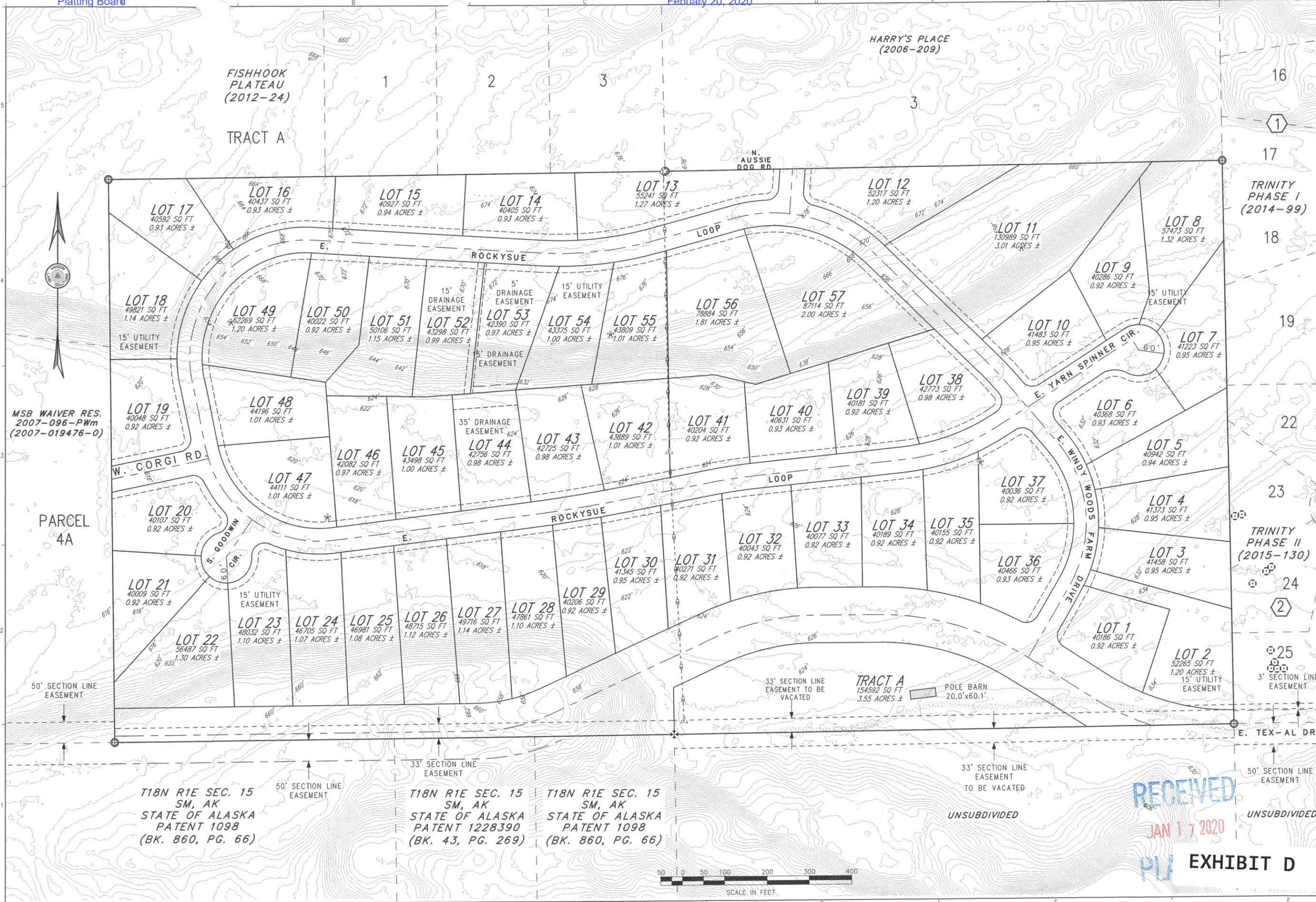


NOTES
1. THIS FIELD SURVEY WAS CONDUCTED ON OCTOBER 21 AND 22, 2019. ALL MONUMENTS HAVE BEEN FOUND OR SET AS DESCRIBED HEREON.
2. ALL DIRECTIONS SHOWN ARE TRUE BEARINGS, AS ORIENTED TO THE BASIS OF BEARINGS.
3. THE 2' CONTOURS SHOWN HEREON WERE DERIVED FROM PUBLISHED DATA OF THE ALASKA SUSIUM BUREAU OF LAND MANAGEMENT PROJECT OF 2011/2012.
4. THE HORIZONTAL DATUM IS NAD83 (GCS06 EPOCH 2011.0)
5. THE VERTICAL DATUM IS NAVD83 (GEOID09)

PALMER, ALASKA
GOODWIN ESTATES
SITE PLAN - EXISTING CONDITIONS
TOPOGRAPHY

DWG.#: 19-282C
DESIGN: CEH
DRAWN BY: ELF
CHECKED: CEH
SCALE
11x17: 1"=200'
22x34: 1"=100'
REVISION DATE:
01-17-20

REFERENCE NUMBER:
V-2.1
SHEET 3 OF 3



MSB WAIVER RES.
2007-096-PWm
(2007-019476-0)

PARCEL
4A

T18N R1E SEC. 15
SM, AK
STATE OF ALASKA
PATENT 1098
(BK. 860, PG. 66)

T18N R1E SEC. 15
SM, AK
STATE OF ALASKA
PATENT 1228390
(BK. 43, PG. 269)

T18N R1E SEC. 15
SM, AK
STATE OF ALASKA
PATENT 1098
(BK. 860, PG. 66)



RECEIVED

JAN 17 2020

PU

EXHIBIT D

LEGEND

- RECOVERED BLM/GLO BRASS CAP ON IRON PIPE
- RECOVERED 2 1/2" ALUMINUM POST MONUMENT
- MEASURED DATA
- WATER WELL
- PEDESTAL, ELECTRIC
- PEDESTAL, TELEPHONE
- SEPTIC VENT/CLEANOUT/ACCESS POINT
- PETROLEUM TANK, ABOVE GROUND
- FENCE
- UNDERGROUND ELECTRIC
- DECK/PORCH
- BUILDING
- GRAVEL ROAD/DRIVEWAY

FISHHOOK PLATEAU (2012-24)

TRACT A

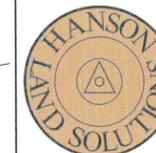
HARRY'S PLACE (2006-209)

TRINITY PHASE I (2014-99)

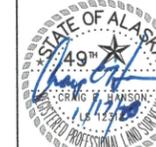
TRINITY PHASE II (2015-130)

MSB WAIVER RES. 2007-096-PWM (2007-019476-0)

PARCEL 4A



HANSON LAND SOLUTIONS 305 E. FIREWEED AVE. PALMER, ALASKA 99645 (907)746-7738

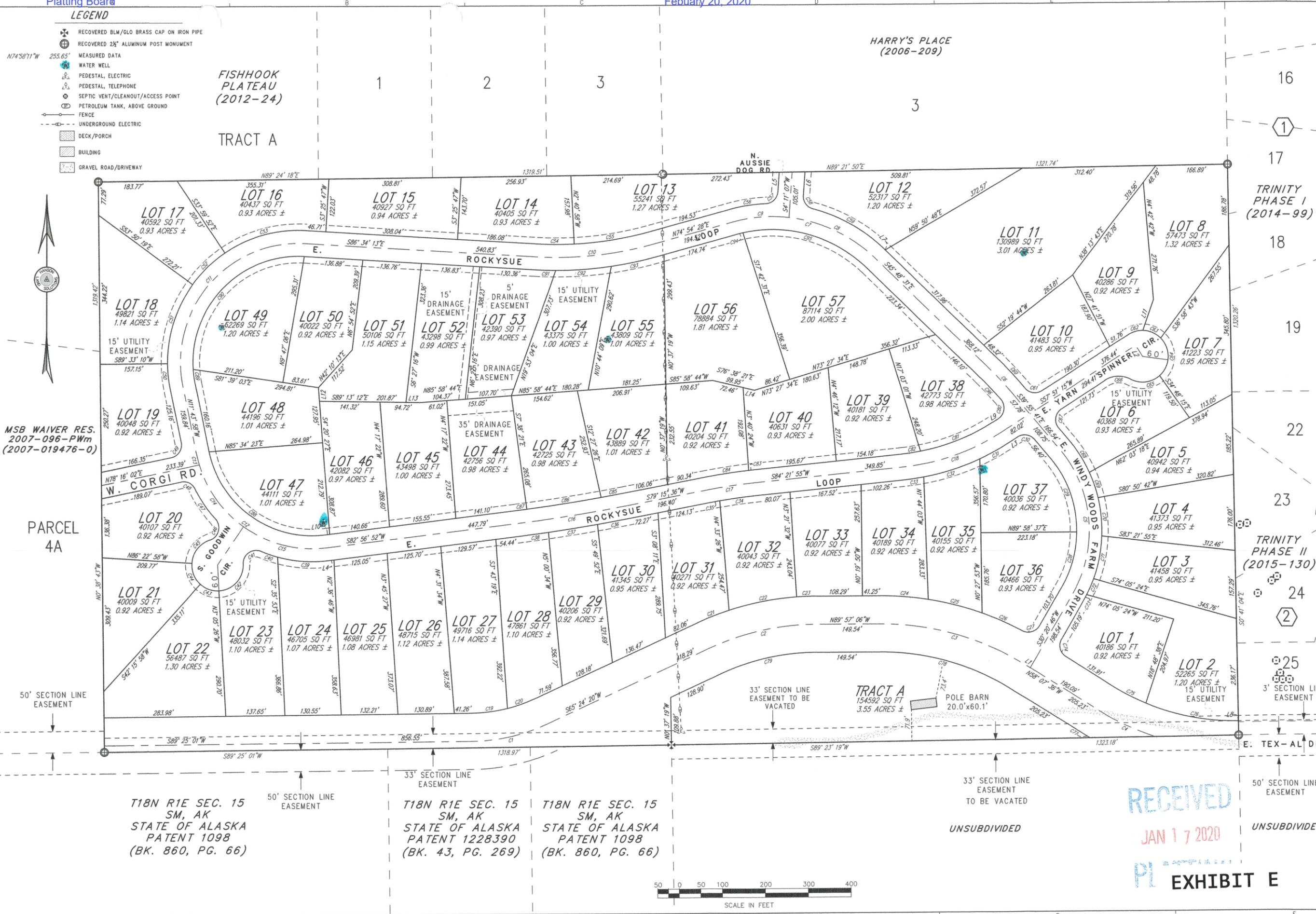


NOTES THIS FIELD SURVEY WAS CONDUCTED ON OCTOBER 21 AND 22, 2019. ALL MONUMENTS HAVE BEEN FOUND OR SET AS DESCRIBED HEREON. 2-ALL DIRECTIONS SHOWN ARE TRUE BEARINGS, AS ORIENTED TO THE BASIS OF BEARINGS.

PALMER, ALASKA GOODWIN ESTATES SITE PLAN - EXISTING CONDITIONS AS-BUILT

DWG.#: 19-282C DESIGN: CEH DRAWN BY: ELF CHECKED: CEH SCALE 11x17: 1"=200' 22x34: 1"=100' REVISION DATE: 01-17-20

REFERENCE NUMBER: V-2.1 SHEET 2 OF 3



T18N R1E SEC. 15 SM, AK STATE OF ALASKA PATENT 1098 (BK. 860, PG. 66)

T18N R1E SEC. 15 SM, AK STATE OF ALASKA PATENT 1228390 (BK. 43, PG. 269)

T18N R1E SEC. 15 SM, AK STATE OF ALASKA PATENT 1098 (BK. 860, PG. 66)



RECEIVED

JAN 17 2020

PI EXHIBIT E



HANSON LAND SOLUTIONS
305 E. FIREWEED AVE.
PALMER, ALASKA 99645
(907)746-7738



NOTES
1. THE IMAGE SHOWN HEREON IS DERIVED FROM PUBLISHED DATA OF THE ALASKA SURVEY THROUGH IMAGERY PROJECT OF 2010/2017.
2. THE HORIZONTAL DATUM IS NAD83 (CORSE EPOCH 2003.0)

PLATTING

ALASKA
PALMER, ALASKA
GOODWIN ESTATES
SITE PLAN - EXISTING CONDITIONS
PROJECT OVERVIEW

DWG.#: 19-282C
DESIGN: CEH
DRAWN BY: ELF
CHECKED: CEH
SCALE
11x17: 1" = 200'
22x34: 1" = 100'
REVISION DATE:
01-17-20

REFERENCE NUMBER:
V-2.0
SHEET 1 OF 3

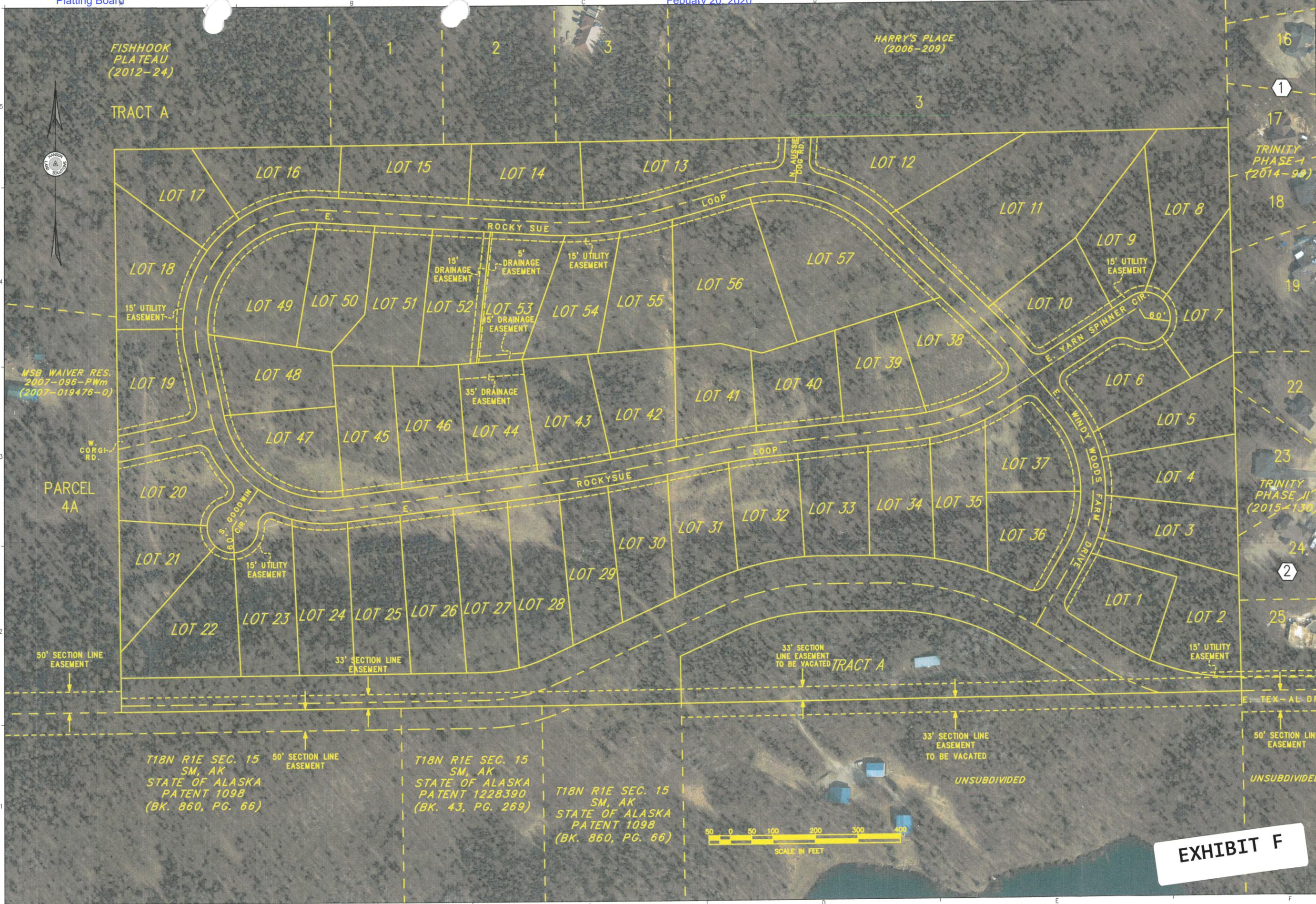


EXHIBIT F

T18N R1E SEC. 15 SM, AK
STATE OF ALASKA PATENT 1098
(BK. 860, PG. 66)

T18N R1E SEC. 15 SM, AK
STATE OF ALASKA PATENT 1228390
(BK. 43, PG. 269)

T18N R1E SEC. 15 SM, AK
STATE OF ALASKA PATENT 1098
(BK. 860, PG. 66)



HOLLER ENGINEERING

Water, Wastewater & Soils Consulting

3375 N Sams Dr. Wasilla, Alaska 99654 • 376-0410

January 17, 2020

Fred Wagner
MSB Platting Officer
350 East Dahlia Avenue
Palmer, Alaska 99645

RECEIVED

JAN 17 2020

PLATTING

Re: *Goodwin Estates Master Plan; Useable Areas, Roads & Drainage;*
Updated for Minor Lotline Changes. HE #19106

Dear Mr. Wagner,

At the request of Hanson Land Solutions LLC, and supporting longtime property owner Sue Goodwin, we have performed a soils review and related preliminary design work for the referenced proposed subdivision. The project will create 57 new lots, one tract and a substantial area of right of way from one existing tract with a total area of approximately 80 acres. Our soils evaluation included logging 38 new testholes, review of the provided topography information, review of aerial imagery, review of surrounding testhole information, and our other observations at the site. See the attached testhole location and topography map for details.

Topography. The project site forms an east-west oriented rectangle lying north of the proposed Tex-Al Road extension and west of the previously developed Trinity View Subdivision. Tex-Al Road is not constructed in this area, nor are there any other existing roads accessing the property. Terrain within the parent parcel varies, with gentle even slopes throughout the center, and high ridges running east to west along the northern third and along the south border. Drainage is generally directed towards the central valley, which runs to the west as shown on the attached map. The total elevation differential indicated from the provided topographical map is approximately 62'. Several large areas with slopes exceeding 25% exist and are delineated on the attached map.

Soils & Vegetation. Much of the original parcel remains relatively undisturbed, with the exceptions being overgrown previously cleared field areas throughout the central valley, associated access paths and a buried electrical service running from north to south near the project center. A private driveway and carport are also located near the southeast corner. The field areas have sparse young birch trees, spruce trees, and grasses. Vegetation in the undisturbed areas consists primarily of birch and spruce trees with tall grasses, minor brush and the occasional cluster of willow or cottonwood. Thirty eight 12'+ testholes were dug on the property to evaluate soil and groundwater conditions. Near surface soils included a thin organic mat over a layer of silty topsoils extending to around 2'-3' in the testholes. Receiving soils under the topsoils were consistently

EXHIBIT G-1

relatively clean sands and gravels to 12' or beyond in the low, central valley and at the high ground forming the northwest corner. Other areas generally contained dense silty gravels or silty sands, with silt contents typically varying from 20% to 30% in areas considered useable. Three percolation tests were conducted, returning absorption rates of 5 to 20 minutes per inch. Copies of the testhole logs, sieve tests, perc tests and the location/topography map are attached.

Groundwater. The testholes were dug in dry weather beginning on November 4th, with relatively high groundwater conditions noted in the local area due to a rainy fall season. Nonetheless, groundwater levels will need to be monitored in the spring in some cases to comply with code date requirements. No groundwater was encountered in any of the 19 logged testholes in the low valley area, however many of the holes located on higher ground encountered groundwater or seeps at depths of 2' to 15'. The testholes were dug to a minimum of 12' or 16', or to 2' past the encountered groundwater. Testholes #26, #27 and #28 were dug trying to locate a gravel source, are presented as supplemental information only, and are not required to support useable areas for the proposed lots. Groundwater is not expected to be a limiting factor for the proposed lots in the lower valley areas, however several lots in the northern upper area will require creation of useable septic area by either placing a suitable fill pad, reducing the groundwater table mechanically with substantial drainage devices, or some combination of the two methods. Creation of deep road ditches and cuts alone is expected to help improve/lower the water table. Any work to lower the groundwater table should be closely monitored over a full year to establish its effectiveness; this may be a reasonable approach due to the planned 2-phase construction which is expected to take at least one year prior to construction of the last phase, which would include the higher groundwater areas.

Useable Areas. The proposed lots have a few limitations on areas defined by MSB code as *useable septic area* or *useable building area*. Useable septic areas will be limited by lotlines, steep areas and related setbacks, areas with shallow groundwater, and setbacks to existing water wells. For useable building area, lotlines, utility easements, and ROW/PUE setbacks will be limiting factors. For most of the proposed lots, adequate unencumbered area exists to readily meet the code requirements. Based on the available soils and water table information, topography, MSB Title 43 Code definitions, and our observations at the site, ***proposed lots as temporarily numbered 1-12, 17-51, 53-57 and Tract A will each contain over 10,000 square feet of contiguous useable septic area, and an additional 10,000 square feet of useable building area. Lots 13-16 and Lot 52 can reasonably be regraded or have their groundwater table permanently lowered to create useable septic area, or a combination of both methods. Verification of this work and final assessment of useable areas by a professional engineer should be made a condition of approval for the master plan, to be completed prior to recording the phase including those 5 lots. Alternately, the lots could be absorbed into an adjacent, conforming lot by removal of the appropriate common lotline or lotlines.***

Road Construction. This project will require the construction or improvement of approximately 6,828' of new roads within the site, including 2 permanent cul-de-sac bulbs and 3 intersections. Based on numerous testholes, gravel materials adequate to form the road base is readily available onsite, and topping will need to be imported or screened. Despite the substantial terrain features, preliminary designs indicate the roads

can be constructed with a maximum centerline grade of 10% or less; a preliminary plan & profile was prepared and will be submitted. The roads proposed for construction are:

S. Goodwin Circle	145 LF
N. Aussie Dog Road	0 LF
W. Corgi Drive	0 LF
E. Tex-Al Road (inside/adjacent to project site)	575 LF
E. Tex-Al Road (east of project site)	475 LF
E. Windy Woods Farm Drive	663 LF
E. Yarn Spinner Circle	337 LF
E. Rocky Sue Loop	<u>4,633 LF</u>
Total	6,828 LF

Based on the topography and road plan, each lot will have a reasonable access point.

Drainage Plan. The road improvements will minimally impact existing overall drainage patterns. A total of 6 corrugated metal 18” culverts are planned to limit concentration of runoff, and attempt to maintain original flow patterns. Multiple rock filled infiltration points are also proposed. The attached map shows the drainage plan, culverts, infiltration points and 4 drainage easements which are proposed. We have also indicated general existing drainage patterns across the project on the attached map. As always, the drainage plan is subject to field modification and improvement during the road construction work.

Please do not hesitate to call with any other questions you may have.

Sincerely,

Curtis Holler, PE

c: Hanson Land Solutions LLC, w/attachments





HOLLER ENGINEERING

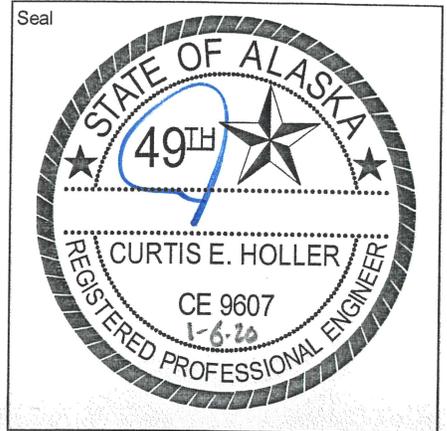
3375 N Sams Dr. Wasilla, Alaska 99654 376-0410

SOILS LOG / PERCOLATION TEST

TEST HOLE # 1 of 38

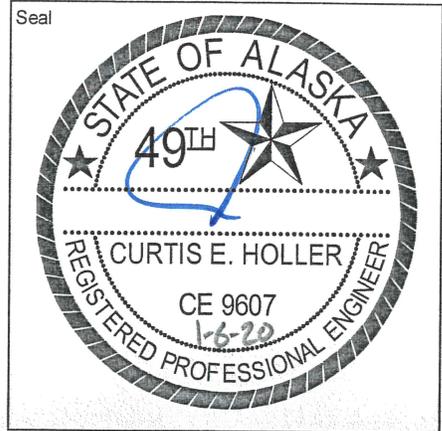
Performed For: Hanson LS/Goodwin

Legal Description: Goodwin Estates



Depth, feet	Soil Type	Slope	Site Plan			
1	OL					
2	ML					
3	SP-GP, olive brown, rock to 3", few 6"+, coarse Sands.		See attached testhole & topo map.			
4						
5						
6						
7	SP-GP, olive gray, rock to 5" few 8"+, sloughs, Coarse sands.					
8						
9	WAS GROUNDWATER ENCOUNTERED? <u>No</u> IF YES, AT WHAT DEPTH? <u>N/A</u> DEPTH AFTER MONITORING? <u>N/A</u>		Slope			
10						
11						
12	No Groundwater No Impermeables					
PERCOLATION TEST						
13	Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
14	N/A visual analysis only					
15						
16						
17						
18	PERCOLATION RATE <u> </u> (min/inch)		PERC HOLE DIAMETER <u> </u>			
19	TEST RUN BETWEEN <u> </u> FT AND <u> </u> FT DEPTH					
20	COMMENTS: <u>Testhole for subdivision only, for any other use contact Holler Engineering</u>					
21						
22	PERFORMED BY: J. Wilkins			DATE: <u>11/4/19</u>		

EXHIBIT G-4



SOILS LOG / PERCOLATION TEST

TEST HOLE # 4 of 38
 Performed For: Hanson LS/Goodwin
 Legal Description: Goodwin Estates

Depth, feet	Soil Type	Slope
1	OL	
2	ML	
3	SP-GP, olive gray, rock to 4", sloughs, coarse	
4	Sands, varies to SP with gravel	
5		
6	SP-GP, olive gray, rock to 4"	
7		
8		
9		
10		
11		
12	No Ground water No Impermeables	
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		

Site Plan

See attached testhole & topo map.

↑
N
↓

WAS GROUNDWATER ENCOUNTERED?
 - No
 IF YES, AT WHAT DEPTH?
 - N/A
 DEPTH AFTER MONITORING?
 - N/A

Slope

PERCOLATION TEST					
Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
N/A visual analysis only					

- PERCOLATION RATE _____ (min/inch) PERC HOLE DIAMETER _____

- TEST RUN BETWEEN FT AND FT DEPTH

- COMMENTS: Testhole for subdivision only, for any other use contact Holler Engineering

- PERFORMED BY: J. Wilkins

DATE: 11/4/19
EXHIBIT G-7



HOLLER ENGINEERING

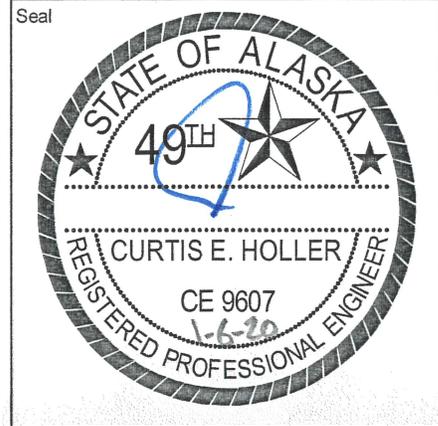
3375 N Sams Dr. Wasilla, Alaska 99654 376-0410

SOILS LOG / PERCOLATION TEST

TEST HOLE # 5 of 38

Performed For: Hanson LS/Goodwin

Legal Description: Goodwin Estates



Depth, feet	Soil Type	Slope	Site Plan
1	OL		See attached testhole & topo map. <div style="text-align: right;">↑ N ↓</div>
2	ML, varies to SM-ML		
3	SP-GP, olive brown, rock to 3", few 7"+, sloughs, coarse sands		
4	SP-GP, olive gray, rock to 4", few 8"+, sloughs		
5			
6			
7			
8			
9			
10			
11			
12	No Groundwater No Impermeables		

WAS GROUNDWATER ENCOUNTERED?

- No

IF YES, AT WHAT DEPTH?

- N/A

DEPTH AFTER MONITORING?

- N/A

Slope

PERCOLATION TEST

Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
N/A visual analysis only					

- PERCOLATION RATE _____ (min/inch) PERC HOLE DIAMETER _____

- TEST RUN BETWEEN FT AND FT DEPTH

- COMMENTS: Testhole for subdivision only, for any other use contact Holler Engineering

- PERFORMED BY: J. Wilkins

DATE: 11/4/19

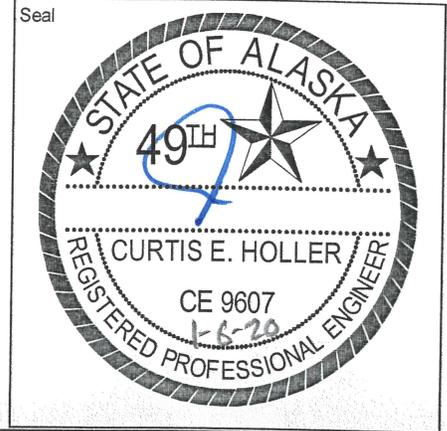
EXHIBIT G-8



HOLLER ENGINEERING

3375 N Sams Dr. Wasilla, Alaska 99654 376-0410

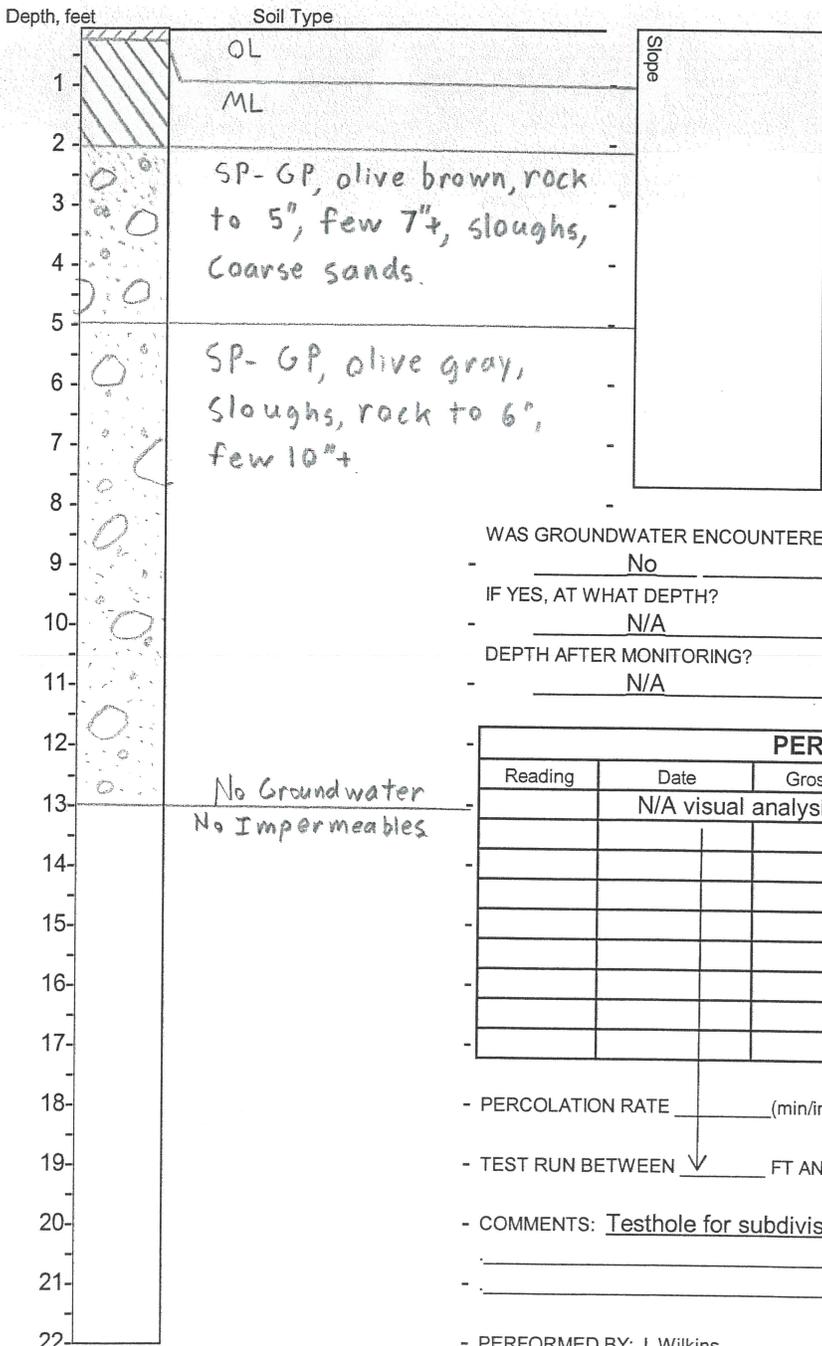
SOILS LOG / PERCOLATION TEST



TEST HOLE # 7 of 38

Performed For: Hanson LS/Goodwin

Legal Description: Goodwin Estates



Site Plan

See attached testhole & topo map.

↑
N
↓

WAS GROUNDWATER ENCOUNTERED?
- No

IF YES, AT WHAT DEPTH?
- N/A

DEPTH AFTER MONITORING?
- N/A

Slope

PERCOLATION TEST					
Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
N/A visual analysis only					

- PERCOLATION RATE _____ (min/inch) PERC HOLE DIAMETER _____

- TEST RUN BETWEEN FT AND FT DEPTH

- COMMENTS: Testhole for subdivision only, for any other use contact Holler Engineering

- PERFORMED BY: J. Wilkins

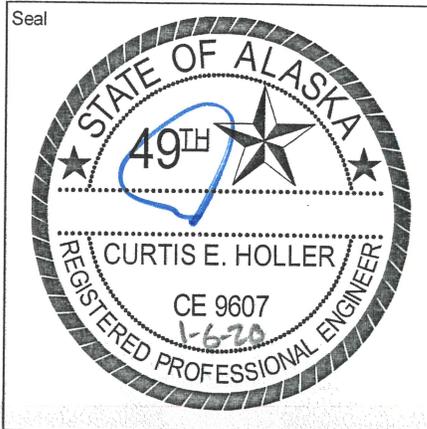
DATE: 11/5/19

EXHIBIT G-10



HOLLER ENGINEERING

3375 N Sams Dr. Wasilla, Alaska 99654 376-0410

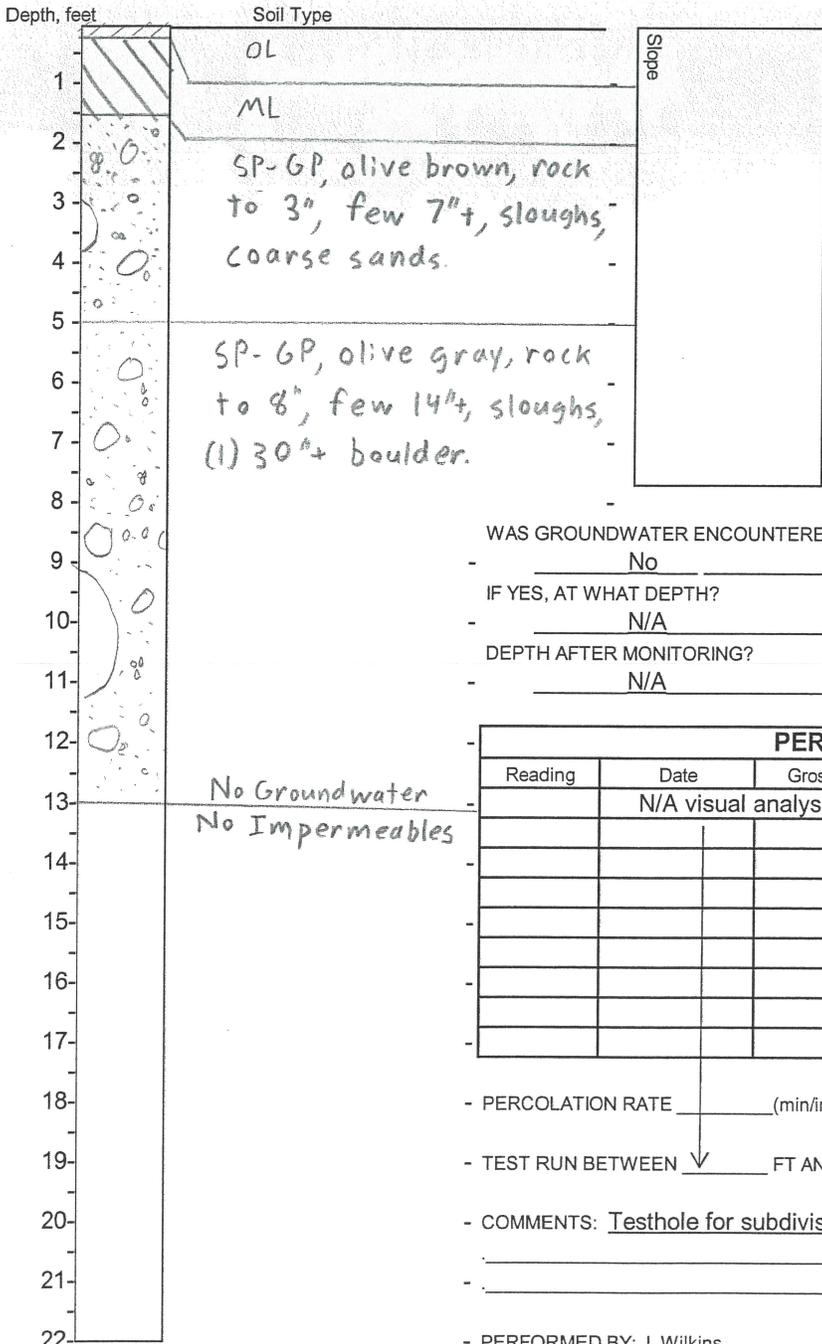


SOILS LOG / PERCOLATION TEST

TEST HOLE # 8 of 38

Performed For: Hanson LS/Goodwin

Legal Description: Goodwin Estates



Site Plan

See attached testhole & topo map.

N ↑

WAS GROUNDWATER ENCOUNTERED?
- No

IF YES, AT WHAT DEPTH?
- N/A

DEPTH AFTER MONITORING?
- N/A

Slope

PERCOLATION TEST					
Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
N/A visual analysis only					

- PERCOLATION RATE _____ (min/inch) PERC HOLE DIAMETER _____

- TEST RUN BETWEEN FT AND FT DEPTH

- COMMENTS: Testhole for subdivision only, for any other use contact Holler Engineering

- PERFORMED BY: J. Wilkins

DATE: 11/5/19

EXHIBIT G-11



HOLLER ENGINEERING

3375 N Sams Dr. Wasilla, Alaska 99654 376-0410



SOILS LOG / PERCOLATION TEST

TEST HOLE # 10 of 38
 Performed For: Hanson LS/ Goodwin
 Legal Description: Goodwin Estates

Depth, feet	Soil Type	Slope
0-1	DL	
1-2	ML, varies to SM-ML	
2-3	SP-GP, olive brown, rock to 5", few 10"+, sloughs, coarse sands	
3-4	SP-GP, olive gray, rock to 7", few 10"+, sloughs, coarse sands.	
4-5		
5-6		
6-7		
7-8		
8-9		
9-10		
10-11		
11-12	No Groundwater No Impermeables	
12-13		
13-14		
14-15		
15-16		
16-17		
17-18		
18-19		
19-20		
20-21		
21-22		

Site Plan

See attached testhole & topo map.

↑
N
↓

WAS GROUNDWATER ENCOUNTERED?
 - No
 IF YES, AT WHAT DEPTH?
 - N/A
 DEPTH AFTER MONITORING?
 - N/A

Slope

PERCOLATION TEST					
Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
N/A visual analysis only					

- PERCOLATION RATE _____ (min/inch) PERC HOLE DIAMETER _____

- TEST RUN BETWEEN FT AND FT DEPTH

- COMMENTS: Testhole for subdivision only, for any other use contact Holler Engineering

- _____

- PERFORMED BY: J. Wilkins

DATE: 11/4/19

EXHIBIT G-13

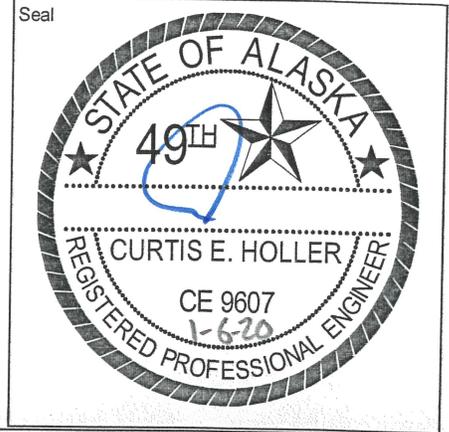


HOLLER ENGINEERING

3375 N Sams Dr. Wasilla, Alaska 99654 376-0410

SOILS LOG / PERCOLATION TEST

TEST HOLE # 11 of 38
 Performed For: Hanson LS/Goodwin
 Legal Description: Goodwin Estates



Depth, feet	Soil Type	Slope	Site Plan
1	OL		See attached testhole & topo map.
2	ML, varies to SM-ML		
3	SP-GP, olive brown, coarse sands, sloughs, rock to 5", few 6"+		
4			
5			
6	SP-GP, olive gray, coarse sands, sloughs, rock to 5", few 6"+		
7			
8			
9			
10			
11			
12	No Groundwater No Impermeables		

WAS GROUNDWATER ENCOUNTERED? No
 IF YES, AT WHAT DEPTH? N/A
 DEPTH AFTER MONITORING? N/A

Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
N/A visual analysis only					

- PERCOLATION RATE _____ (min/inch) PERC HOLE DIAMETER _____
 - TEST RUN BETWEEN FT AND FT DEPTH
 - COMMENTS: Testhole for subdivision only, for any other use contact Holler Engineering
 - _____
 - PERFORMED BY: J. Wilkins

DATE: 11/4/19

EXHIBIT G-14



HOLLER ENGINEERING

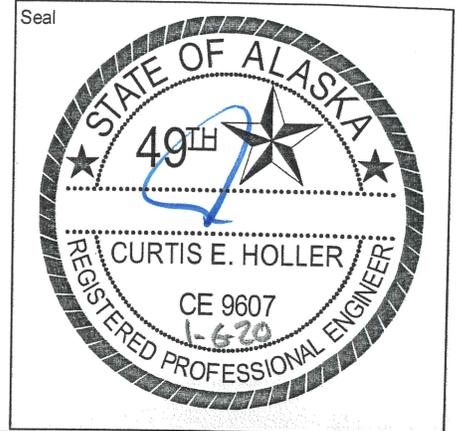
3375 N Sams Dr. Wasilla, Alaska 99654 376-0410

SOILS LOG / PERCOLATION TEST

TEST HOLE # 12 of 38

Performed For: Hanson LS/Goodwin

Legal Description: Goodwin Estates



Depth, feet	Soil Type	Slope
1	OL	
2	ML, varies to SM-ML	
3	SP-GP, olive brown, coarse sands rock to 3", few 7"+, sloughs	
4	SP-GP, olive gray, rock to 3", few 7"+, sloughs	
5		
6		
7		
8		
9		
10		
11		
12	No Groundwater No Impermeables	

Site Plan

↑
N
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See attached testhole & topo map.

WAS GROUNDWATER ENCOUNTERED?
- No

IF YES, AT WHAT DEPTH?
- N/A

DEPTH AFTER MONITORING?
- N/A

Slope

PERCOLATION TEST					
Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
N/A visual analysis only					

- PERCOLATION RATE _____ (min/inch) PERC HOLE DIAMETER _____

- TEST RUN BETWEEN FT AND FT DEPTH

- COMMENTS: Testhole for subdivision only, for any other use contact Holler Engineering

- _____

- PERFORMED BY: J. Wilkins

DATE: 11/4/19

EXHIBIT G-15



HOLLER ENGINEERING

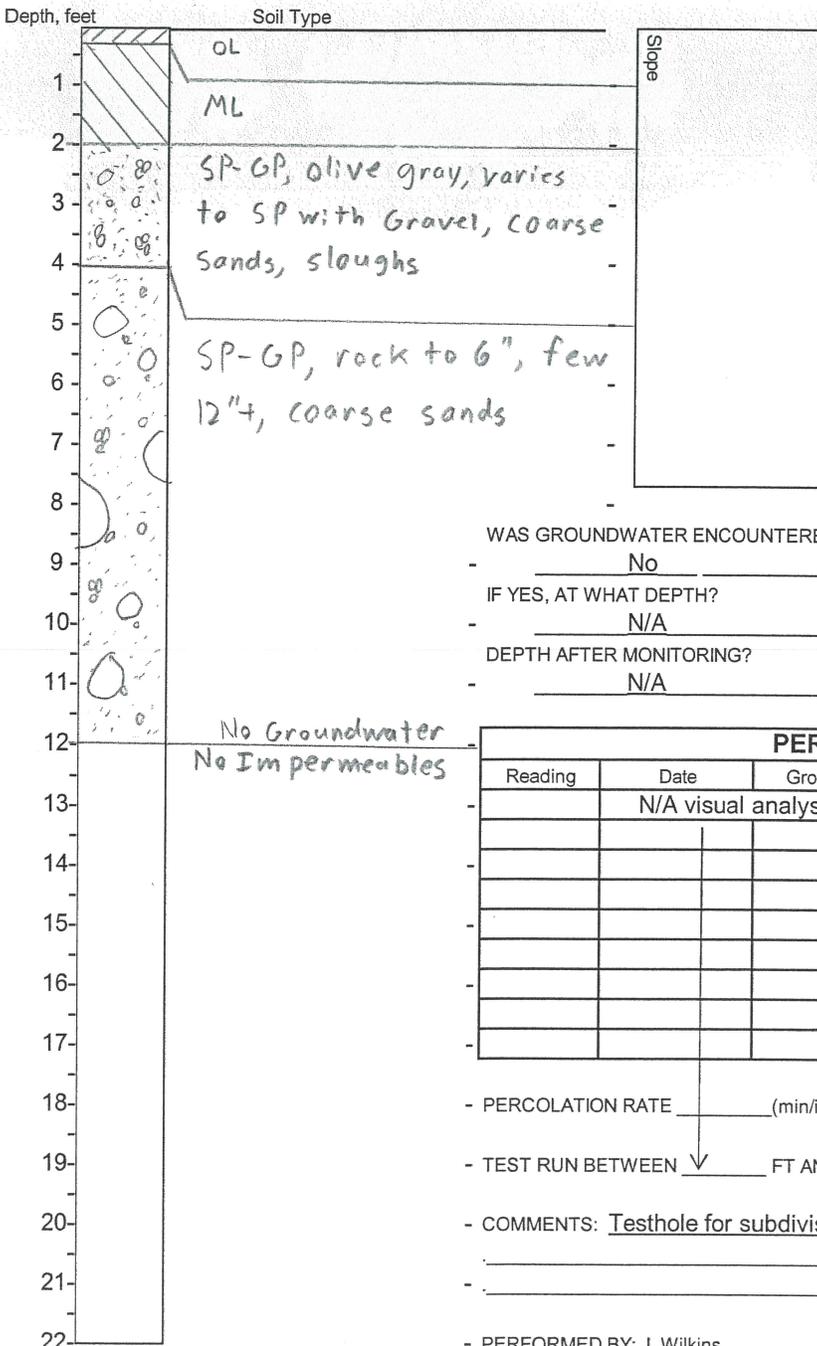
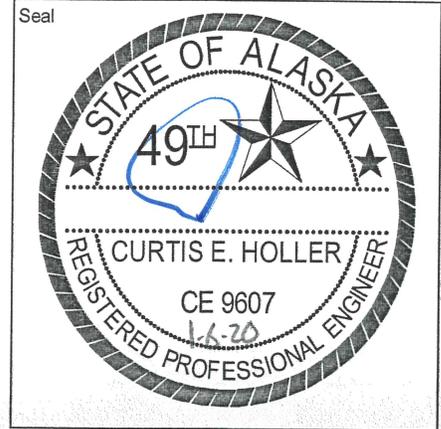
3375 N Sams Dr. Wasilla, Alaska 99654 376-0410

SOILS LOG / PERCOLATION TEST

TEST HOLE # 14 of 38

Performed For: Hanson LS/ Goodwin

Legal Description: Goodwin Estates



Site Plan

↑
N
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See attached testhole & topo map.

WAS GROUNDWATER ENCOUNTERED?
- No

IF YES, AT WHAT DEPTH?
- N/A

DEPTH AFTER MONITORING?
- N/A

Slope

PERCOLATION TEST					
Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
N/A visual analysis only					

- PERCOLATION RATE _____ (min/inch) PERC HOLE DIAMETER _____

- TEST RUN BETWEEN FT AND FT DEPTH

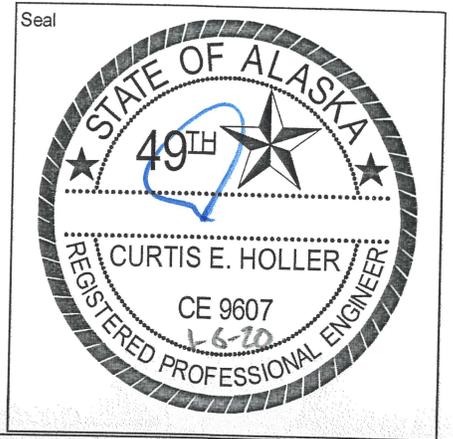
- COMMENTS: Testhole for subdivision only, for any other use contact Holler Engineering

- _____

- PERFORMED BY: J. Wilkins

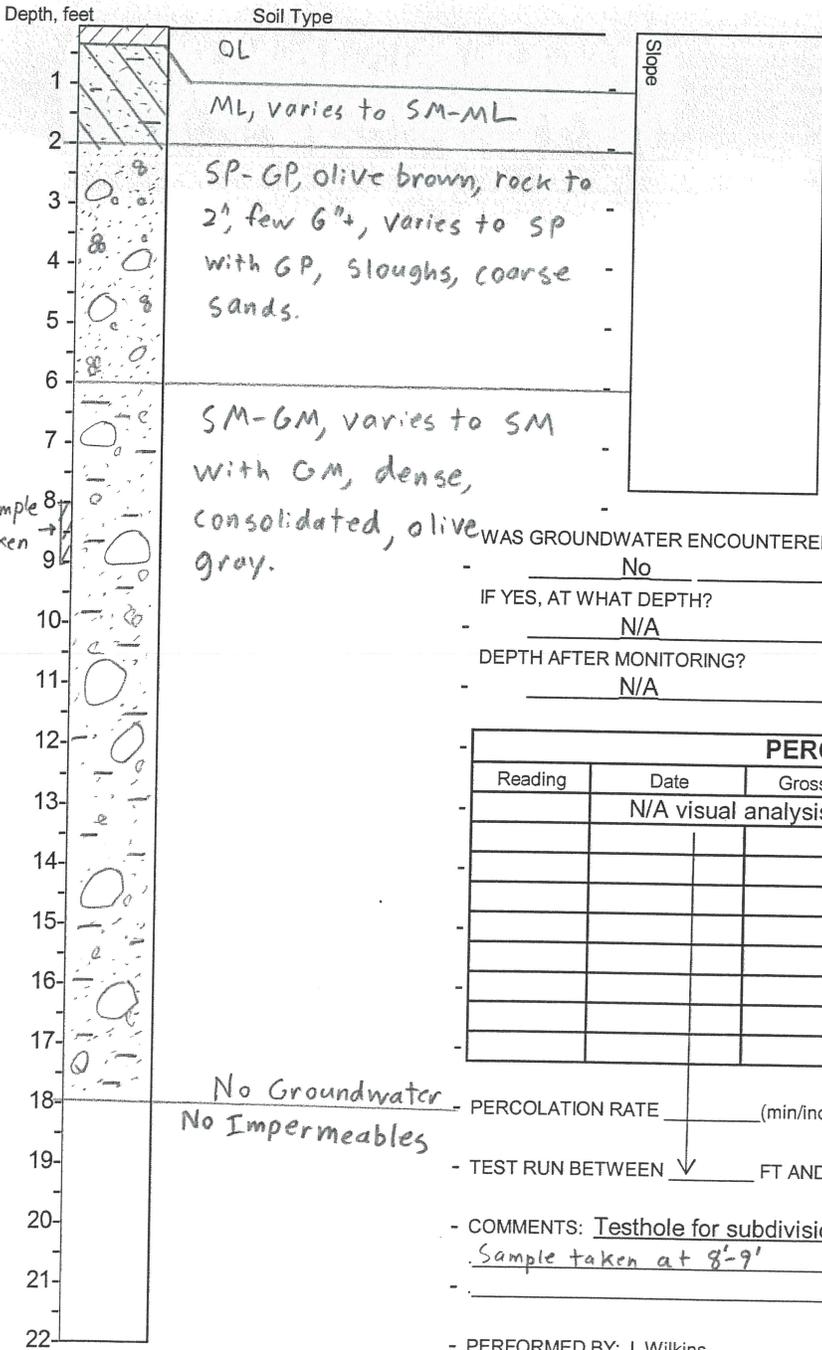
DATE: 11/4/19

EXHIBIT G-17



SOILS LOG / PERCOLATION TEST

TEST HOLE # 16 of 38
 Performed For: Hanson LS / Goodwin
 Legal Description: Goodwin Estates



Site Plan

See attached testhole & topo map.

↑ N ↓

WAS GROUNDWATER ENCOUNTERED?
 - No
 IF YES, AT WHAT DEPTH?
 - N/A
 DEPTH AFTER MONITORING?
 - N/A

Slope

Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
N/A visual analysis only					

PERCOLATION RATE _____ (min/inch) PERC HOLE DIAMETER _____
 - TEST RUN BETWEEN FT AND FT DEPTH
 - COMMENTS: Testhole for subdivision only, for any other use contact Holler Engineering
Sample taken at 8'-9'
 - _____
 - PERFORMED BY: J. Wilkins

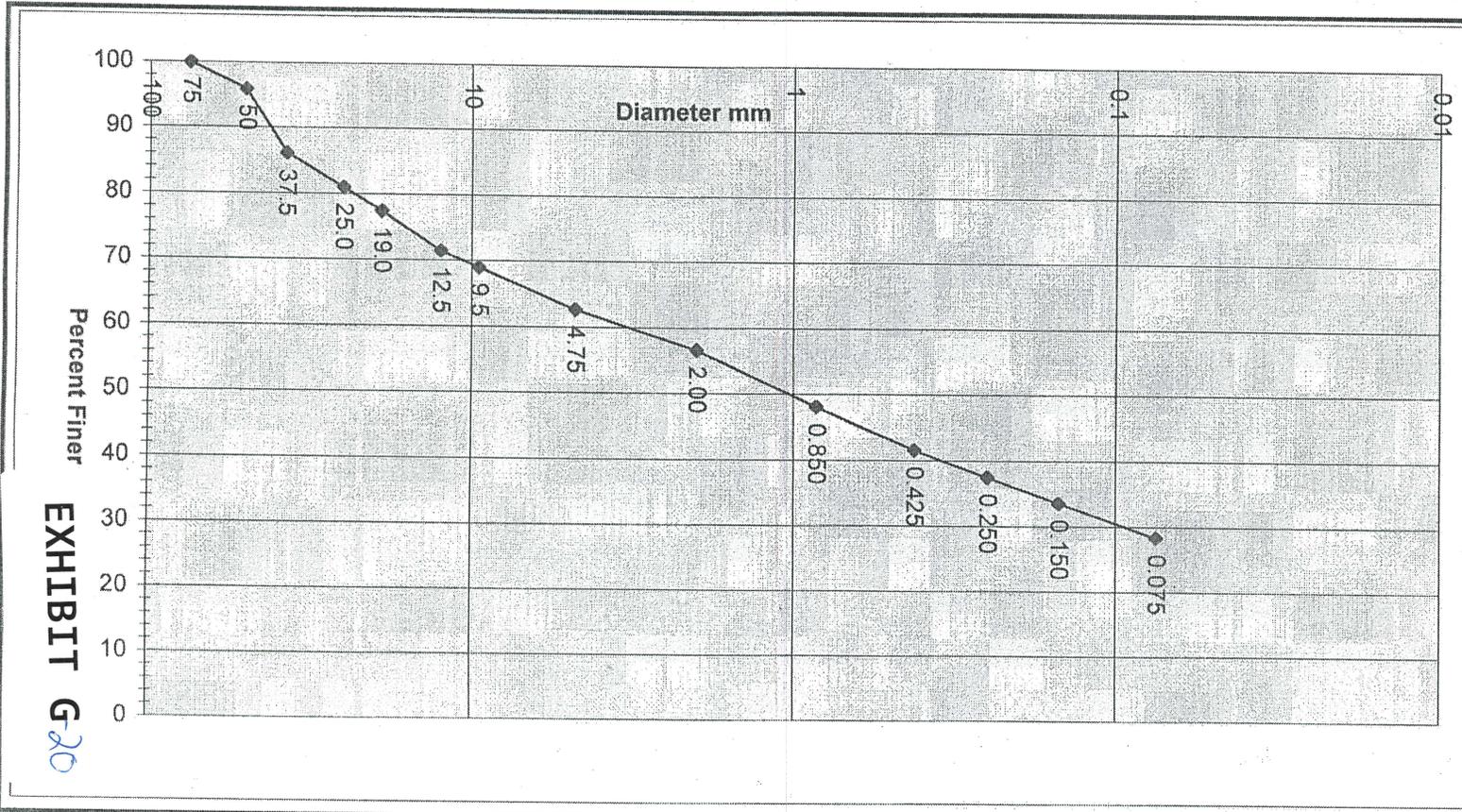
DATE: 11/4/19

EXHIBIT G-19



MARK HANSEN P.E.

CONSULTING ENGINEERS TESTING LABORATORY
 2605 N. Old Glenn Hwy, Palmer, AK 99645 Phone: (907) 745-4721
 e-mail: mhpe@mtaonline.net



Sieve	Diameter mm	Percent Finer
3"	75	100
2"	50	96
1.5"	37.5	86
1"	25.0	81
3/4"	19.0	77
1/2"	12.5	71
3/8"	9.5	69
#4	4.75	63
#10	2.00	57
#20	0.850	48
#40	0.425	42
#60	0.250	37
#100	0.150	34
#200	0.075	28.3

Client: **Hanson LS / Holler Eng**

Soil Description: Silty Gravel with Sand

Project: **Goodwin Estates.**

Unified Classification: GM

Sample Location: TH# 16 @ 8' - 9'

Date: 11/14/2019

Sample Date: 11/4/2019

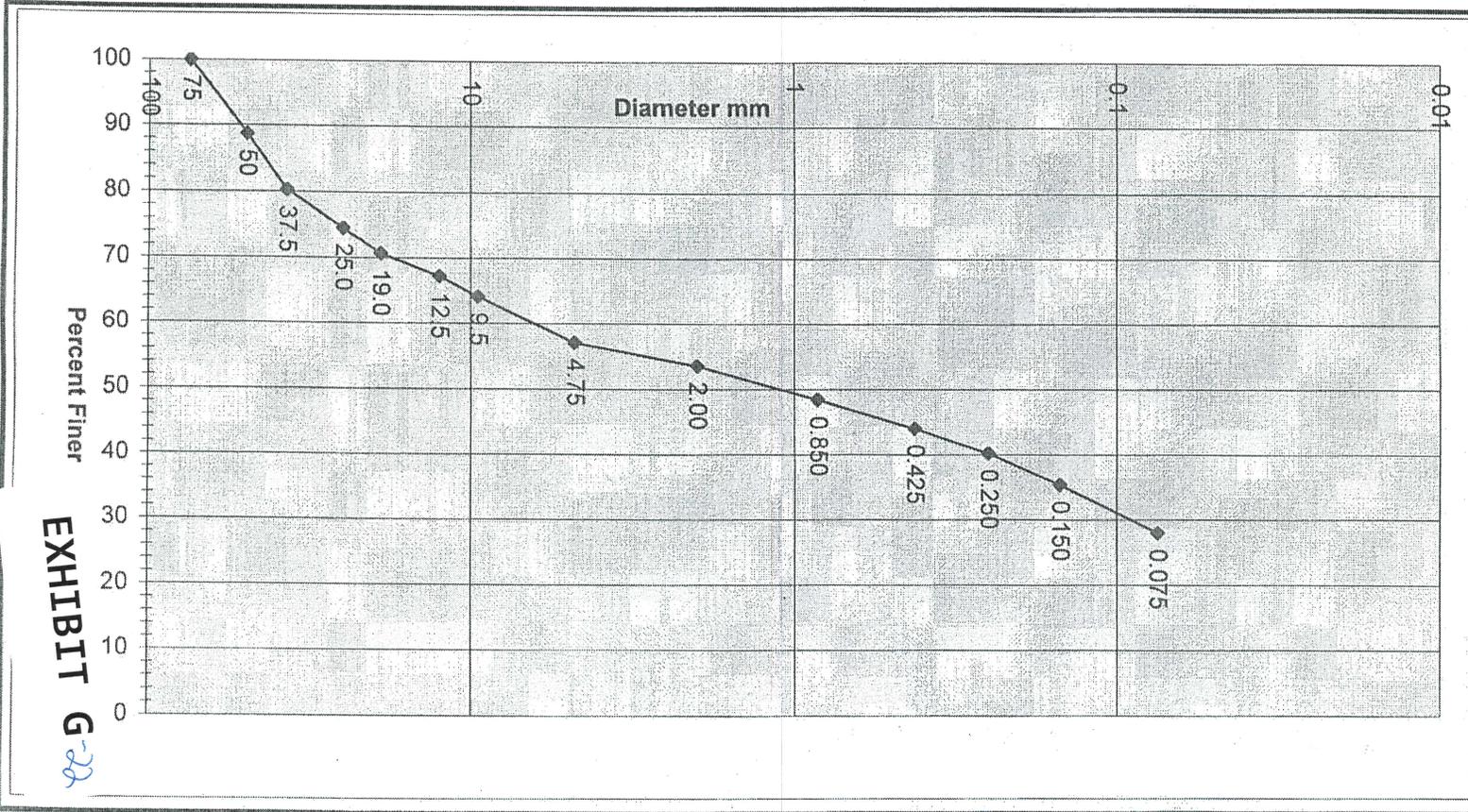
Proj. no: 19137

EXHIBIT G-20



MARK HANSEN P.E.

CONSULTING ENGINEERS TESTING LABORATORY
 2605 N. Old Glenn Hwy, Palmer, AK 99645 Phone: (907) 745-4721
 e-mail: mhpe@mtaonline.net



Sieve	Diameter mm	Percent Finer
3"	75	100
2"	50	89
1.5"	37.5	80
1"	25.0	75
3/4"	19.0	71
1/2"	12.5	67
3/8"	9.5	64
#4	4.75	57
#10	2.00	54
#20	0.850	48
#40	0.425	44
#60	0.250	40
#100	0.150	35
#200	0.075	28.0

Client: **Hanson LS / Holler Eng**

Soil Description: Silty Gravel with Sand

Project: **Goodwin Estates.**

Unified Classification: GM

Sample Location: TH# 17 @ 7' - 8'

Date: 11/14/2019

Sample Date: 11/4/2019

Proj. no: 19137



HOLLER ENGINEERING

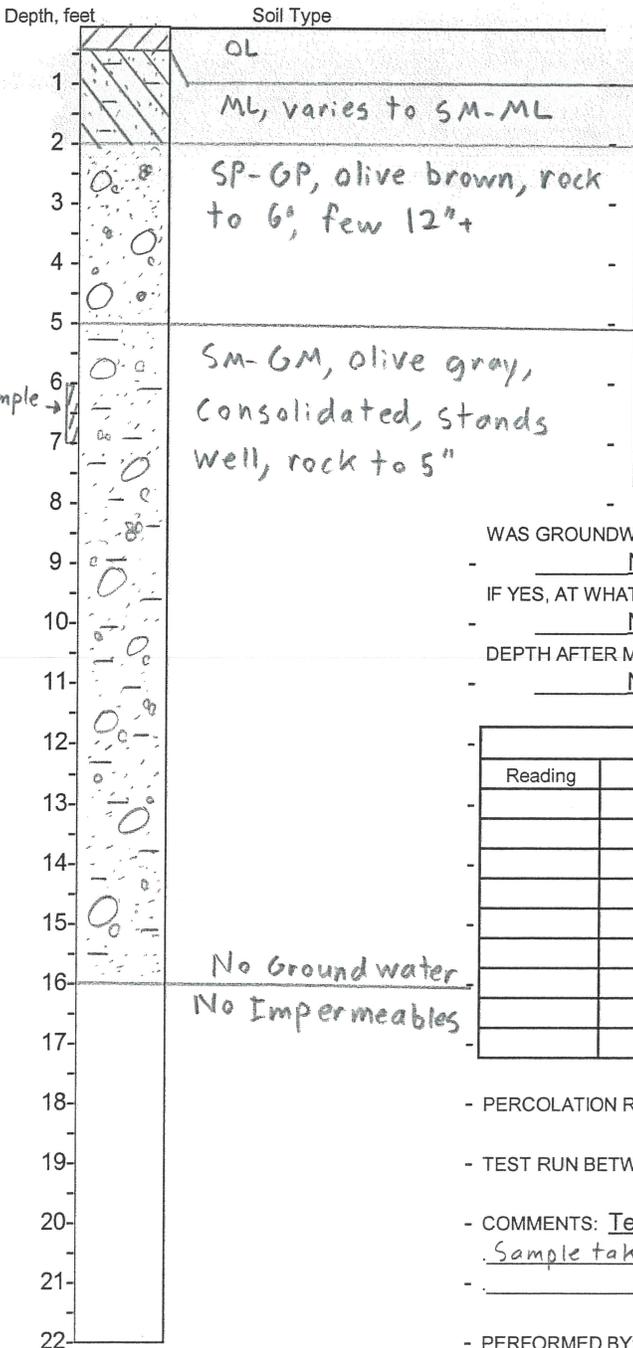
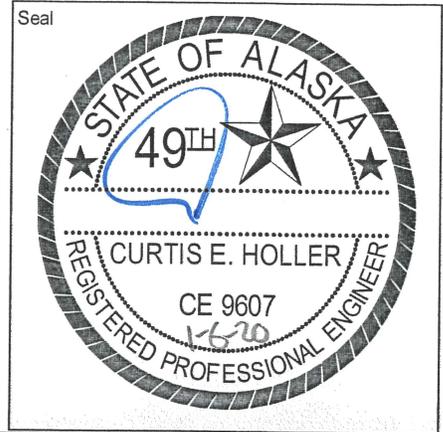
3375 N Sams Dr. Wasilla, Alaska 99654 376-0410

SOILS LOG / PERCOLATION TEST

TEST HOLE # 18 of 38

Performed For: Hanson LS/Goodwin

Legal Description: Goodwin Estates



Site Plan

See attached testhole & topo map.

↑
N
↓

WAS GROUNDWATER ENCOUNTERED?
- No

IF YES, AT WHAT DEPTH?
- N/A

DEPTH AFTER MONITORING?
- N/A

Slope

PERCOLATION TEST					
Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
	N/A visual analysis only				

- PERCOLATION RATE _____ (min/inch) PERC HOLE DIAMETER _____

- TEST RUN BETWEEN 1 FT AND _____ FT DEPTH

- COMMENTS: Testhole for subdivision only, for any other use contact Holler Engineering
Sample taken at 6'-7'

- PERFORMED BY: J. Wilkins

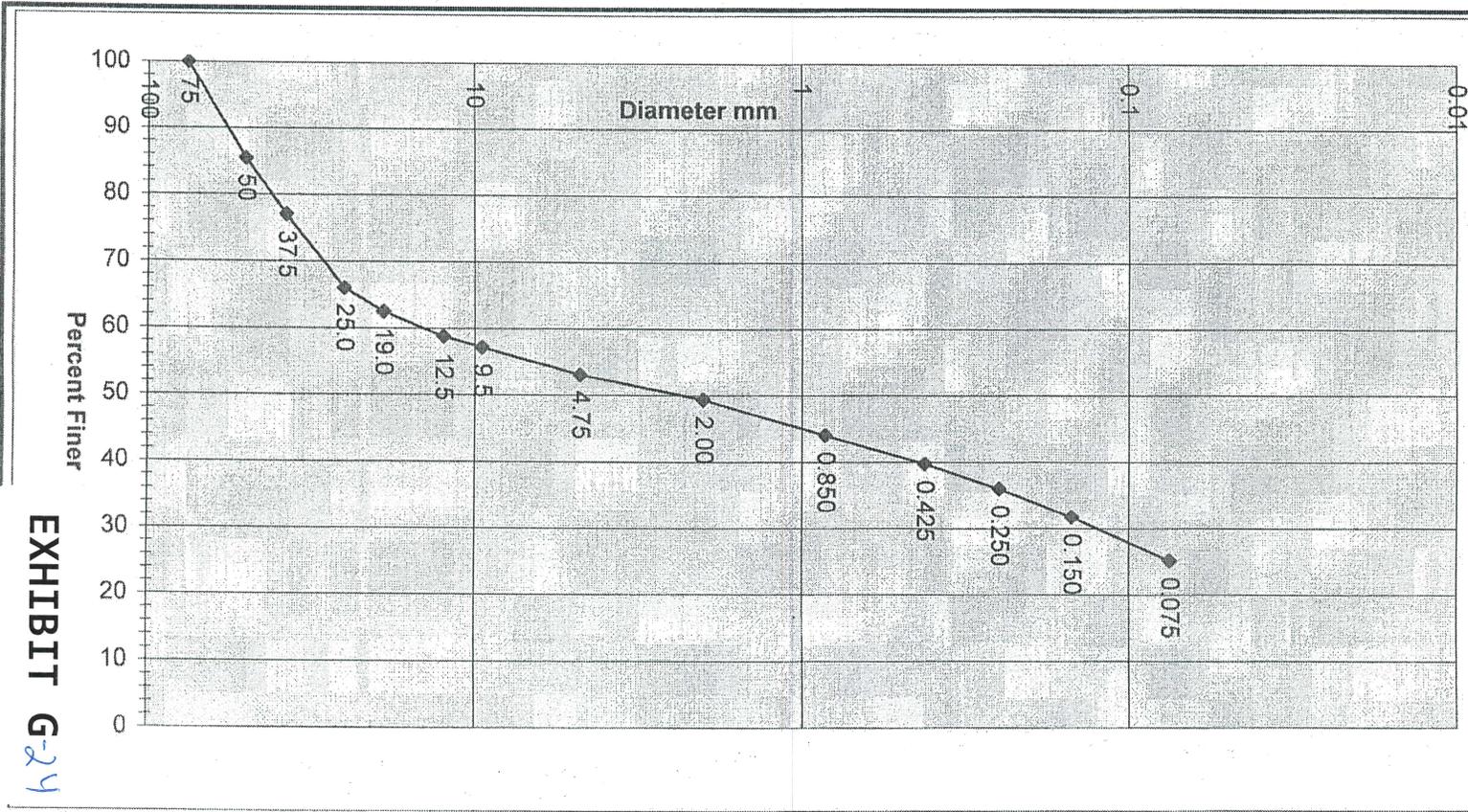
DATE: 1/4/19

EXHIBIT G-23



MARK HANSEN P.E.

CONSULTING ENGINEERS TESTING LABORATORY
 2605 N. Old Glenn Hwy, Palmer, AK 99645 Phone: (907) 745-4721
 e-mail: mhpe@mtaonline.net



Sieve	Diameter mm	Percent Finer
3"	75	100
2"	50	85
1.5"	37.5	77
1"	25.0	66
3/4"	19.0	62
1/2"	12.5	59
3/8"	9.5	57
#4	4.75	53
#10	2.00	49
#20	0.850	44
#40	0.425	40
#60	0.250	36
#100	0.150	32
#200	0.075	25.1

Client: **Hanson LS / Holler Eng**

Soil Description: Silty Gravel with Sand.

Project: **Goodwin Estates.**

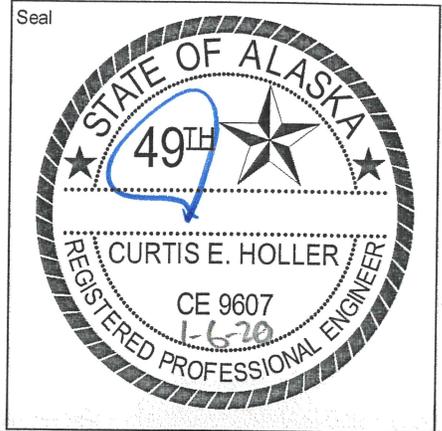
Unified Classification: GM

Date: 11/14/2019

Sample Location: TH# 18 @ 6' - 7'

Sample Date: 11/4/2019

Proj. no: 19137



SOILS LOG / PERCOLATION TEST

TEST HOLE # 19 of 38
 Performed For: Hanson LS / Goodwin
 Legal Description: Goodwin Estates

Depth, feet	Soil Type	Slope	Site Plan
1	OL		See attached testhole & topo map N ↑
1-2	ML, varies to SM-ML		
2-3	SM-GM, light olive brown, dense, Consolidated.		
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			

Light Seeps (at 1-2 ft)

Sample (at 7-8 ft)

Monitor (at 15 ft)

WAS GROUNDWATER ENCOUNTERED? Yes
 IF YES, AT WHAT DEPTH? 2' (seeps)
 DEPTH AFTER MONITORING? 4.7' (24 hrs)

Slope

Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
N/A visual analysis only					

- PERCOLATION RATE _____ (min/inch) PERC HOLE DIAMETER _____
 - TEST RUN BETWEEN 15 FT AND _____ FT DEPTH
 - COMMENTS: Testhole for subdivision only, for any other use contact Holler Engineering
Sample taken at 7'-8'; Monitor tube installed to 16'
 - _____
 - PERFORMED BY: J. Wilkins

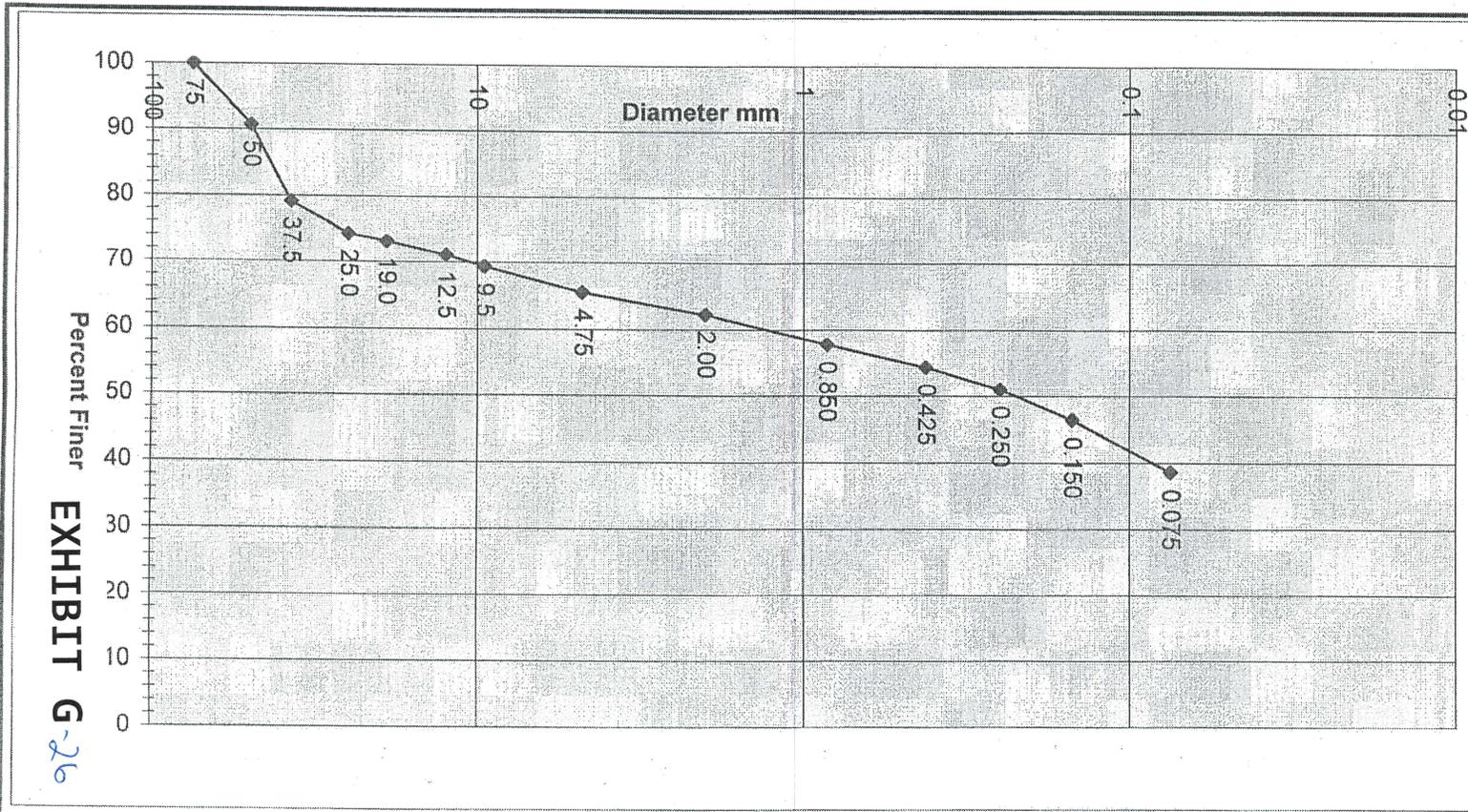
DATE: 11/4/19

EXHIBIT G-25



MARK HANSEN P.E.

CONSULTING ENGINEERS TESTING LABORATORY
 2605 N. Old Glenn Hwy, Palmer, AK 99645 Phone: (907) 745-4721
 e-mail: mhpe@mtaonline.net



Sieve	Diameter mm	Percent Finer
3"	75	100
2"	50	91
1.5"	37.5	79
1"	25.0	74
3/4"	19.0	73
1/2"	12.5	71
3/8"	9.5	69
#4	4.75	66
#10	2.00	62
#20	0.850	58
#40	0.425	54
#60	0.250	51
#100	0.150	46
#200	0.075	38.6

Client: **Hanson LS / Holler Eng**

Soil Description: Silty Gravel with Sand

Project: **Goodwin Estates.**

Unified Classification: GM

Sample Location: TH# 19 @ 7' - 8'

Date: 11/14/2019

Sample Date: 11/4/2019

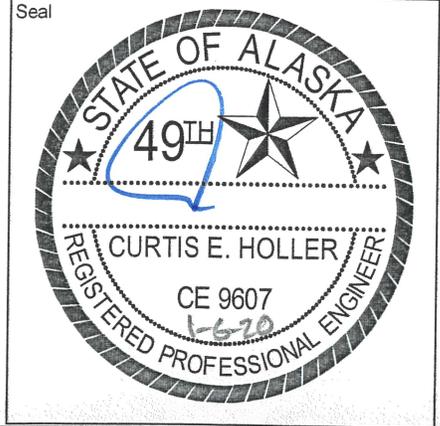
Proj. no: 19137

EXHIBIT G-26



HOLLER ENGINEERING

3375 N Sams Dr. Wasilla, Alaska 99654 376-0410



SOILS LOG / PERCOLATION TEST

TEST HOLE # 21 of 38

Performed For: Hanson LS/Goodwin

Legal Description: Goodwin Estates

Depth, feet	Soil Type
1	OL
2	ML
3	SP-GP, olive brown, rock to 3", few 5"+, sloughs, coarse sands
4	
5	
6	SP-GP, olive gray, rock to 6", few 14"+, sloughs
7	
8	
9	
10	
11	
12	No Groundwater
13	No Impermeables
14	
15	
16	
17	
18	
19	
20	
21	
22	

Slope

Site Plan

See attached testhole & topo map.

N ↑

WAS GROUNDWATER ENCOUNTERED? No

IF YES, AT WHAT DEPTH? N/A

DEPTH AFTER MONITORING? N/A

Slope

PERCOLATION TEST					
Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
N/A visual analysis only					

- PERCOLATION RATE _____ (min/inch) PERC HOLE DIAMETER _____

- TEST RUN BETWEEN 12 FT AND _____ FT DEPTH

- COMMENTS: Testhole for subdivision only, for any other use contact Holler Engineering

- _____

- PERFORMED BY: J. Wilkins

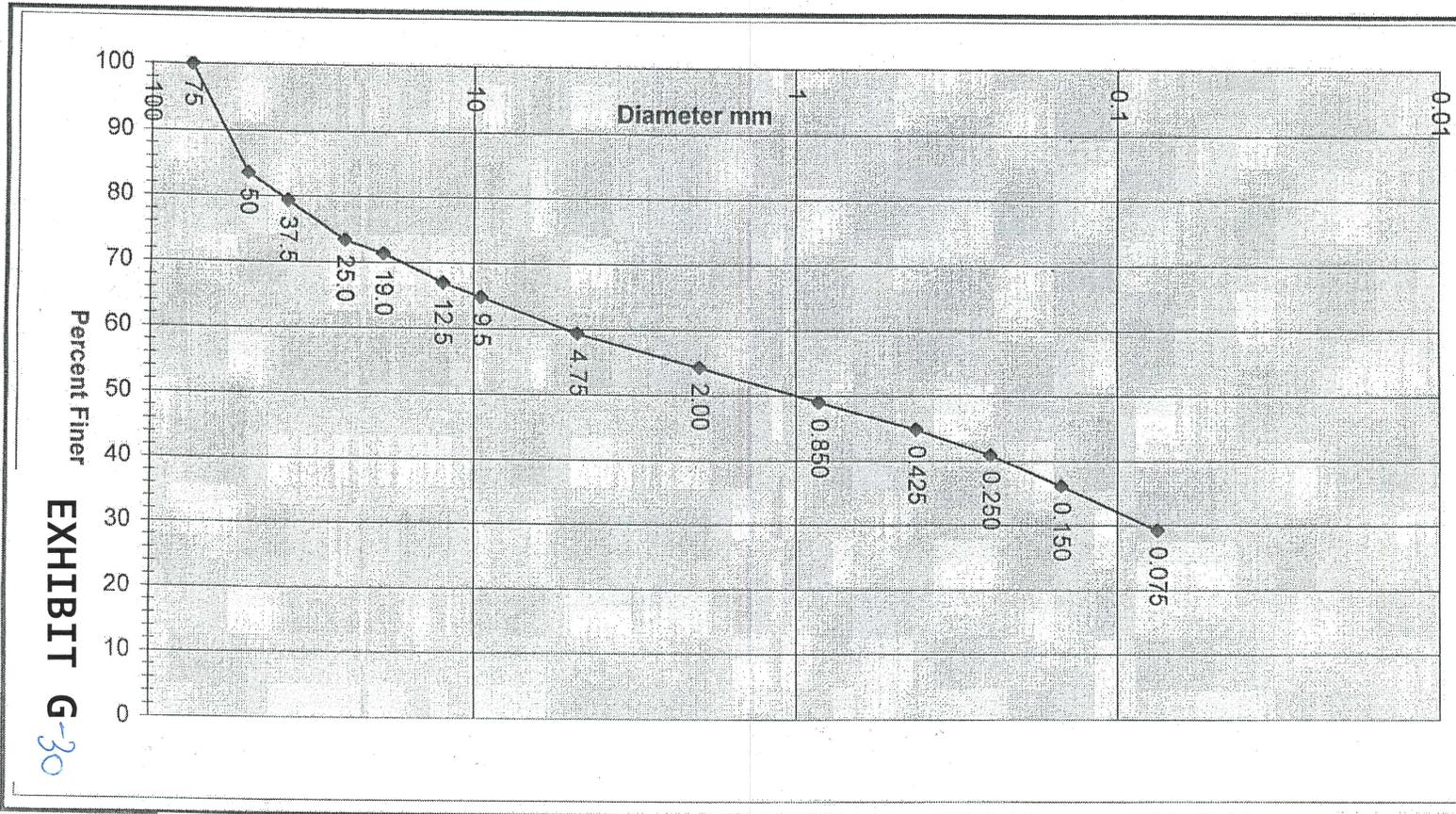
DATE: 11/5/19.

EXHIBIT G-28



MARK HANSEN P.E.

CONSULTING ENGINEERS TESTING LABORATORY
 2605 N. Old Glenn Hwy, Palmer, AK 99645 Phone: (907) 745-4721
 e-mail: mhpe@mtaonline.net



Sieve	Diameter mm	Percent Finer
3"	75	100
2"	50	84
1.5"	37.5	79
1"	25.0	73
3/4"	19.0	71
1/2"	12.5	67
3/8"	9.5	65
#4	4.75	59
#10	2.00	54
#20	0.850	49
#40	0.425	45
#60	0.250	41
#100	0.150	36
#200	0.075	29.2

EXHIBIT G-30

Client: **Hanson LS / Holler Eng**

Soil Description: Silty Gravel with Sand

Project: **Goodwin Estates.**

Unified Classification: GM

Sample Location: TH# 22 @ 7' - 8'

Date: 11/14/2019

Sample Date: 11/4/2019

Proj. no: 19137



HOLLER ENGINEERING

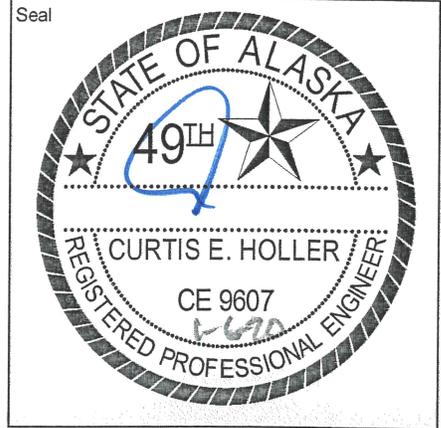
3375 N Sams Dr. Wasilla, Alaska 99654 376-0410

SOILS LOG / PERCOLATION TEST

TEST HOLE # 23 of 38

Performed For: Hanson LS / Goodwin

Legal Description: Goodwin Estates



Depth, feet	Soil Type	Slope	Site Plan
1	OL		See attached testhole & topo map ↑ N ↓
2	ML, varies to SM-ML		
3	SP-GP, olive brown		
4			
5			
6	SM-GM, dense		
7			
8			
9		WAS GROUNDWATER ENCOUNTERED? - <u>Yes</u> IF YES, AT WHAT DEPTH? - <u>5.5' (Seeps)</u> DEPTH AFTER MONITORING? - <u>3.5' (24 hrs)</u>	
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			

PERCOLATION TEST					
Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
N/A visual analysis only					

- PERCOLATION RATE _____ (min/inch) PERC HOLE DIAMETER _____

- TEST RUN BETWEEN FT AND FT DEPTH

- COMMENTS: Testhole for subdivision only, for any other use contact Holler Engineering
Sample taken at 6'-7', Monitor pipe installed to 8'

- PERFORMED BY: J. Wilkins

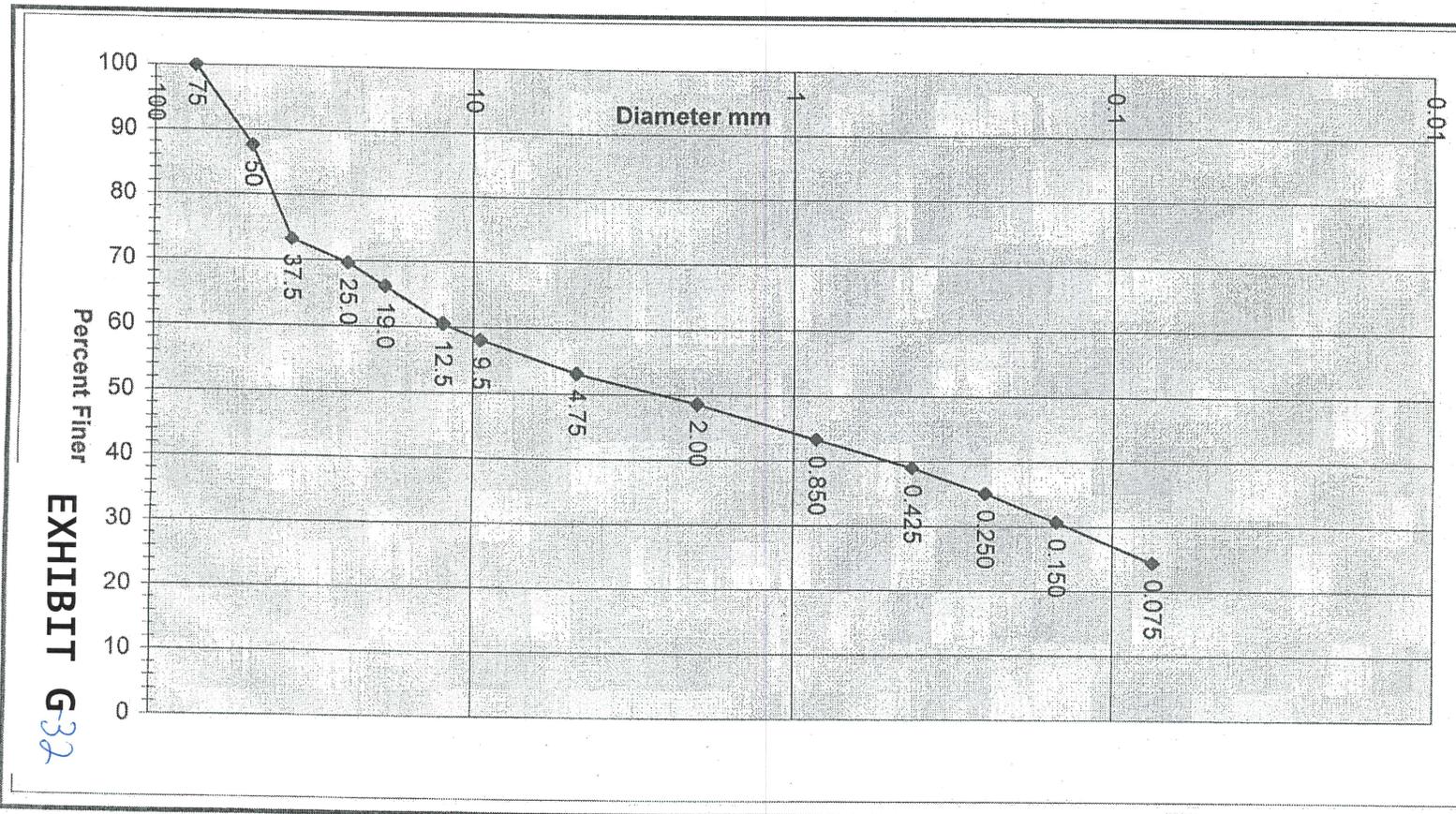
DATE: 11/4/19

EXHIBIT G-31



MARK HANSEN P.E.

CONSULTING ENGINEERS TESTING LABORATORY
 2605 N. Old Glenn Hwy, Palmer, AK 99645 Phone: (907) 745-4721
 e-mail: mhpe@mtaonline.net



Sieve	Diameter mm	Percent Finer
3"	75	100
2"	50	88
1.5"	37.5	73
1"	25.0	70
3/4"	19.0	66
1/2"	12.5	60
3/8"	9.5	58
#4	4.75	53
#10	2.00	49
#20	0.850	43
#40	0.425	39
#60	0.250	35
#100	0.150	31
#200	0.075	24.4

EXHIBIT G-32

Client: **Hanson LS / Holler Eng**

Soil Description: Silty Gravel with Sand

Project: **Goodwin Estates.**

Unified Classification: GM

Date: 11/14/2019

Sample Location: TH# 23 @ 6' - 7'

Sample Date: 11/4/2019

Sample has 10% cobbles over 3" not shown in gradation.

Proj. no: 19137



HOLLER ENGINEERING

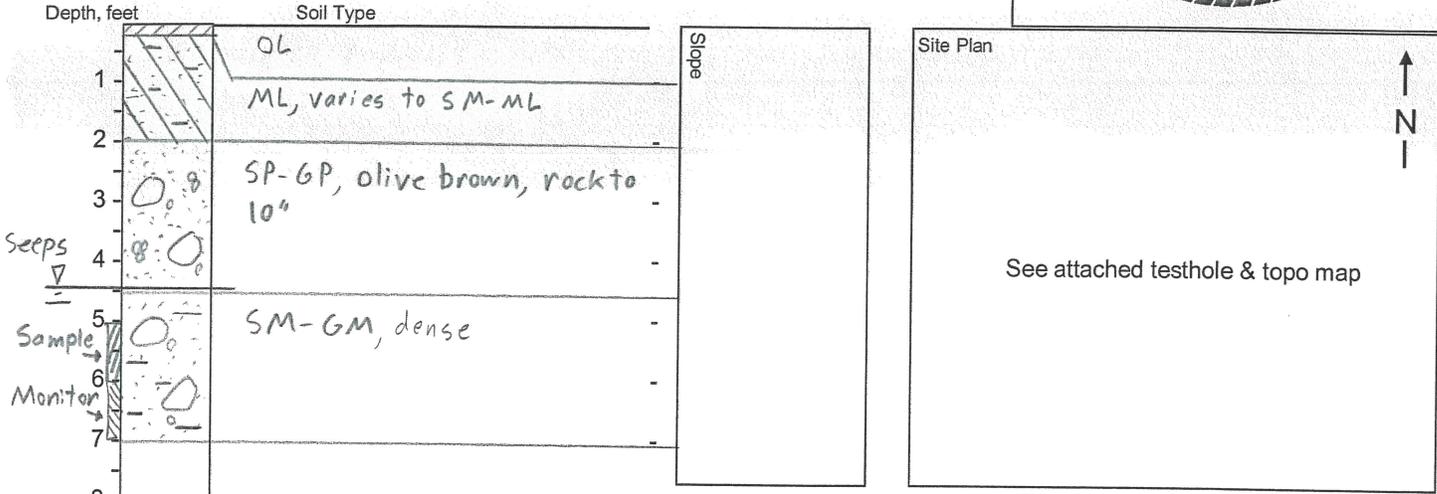
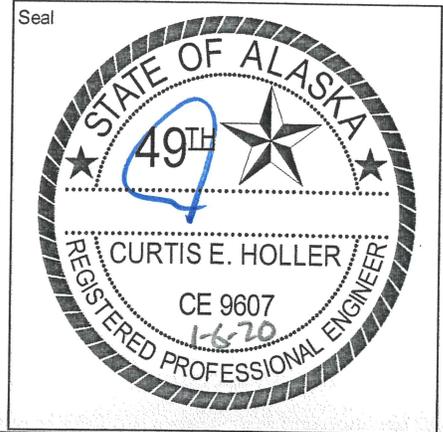
3375 N Sams Dr. Wasilla, Alaska 99654 376-0410

SOILS LOG / PERCOLATION TEST

TEST HOLE # 24 of 38

Performed For: Hanson LS/Goodwin

Legal Description: Goodwin Estates



WAS GROUNDWATER ENCOUNTERED?
 - Yes
 IF YES, AT WHAT DEPTH?
 - 4.5' (Seeps)
 DEPTH AFTER MONITORING?
 - 4.6' (24 hrs)

Slope

Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
N/A visual analysis only					

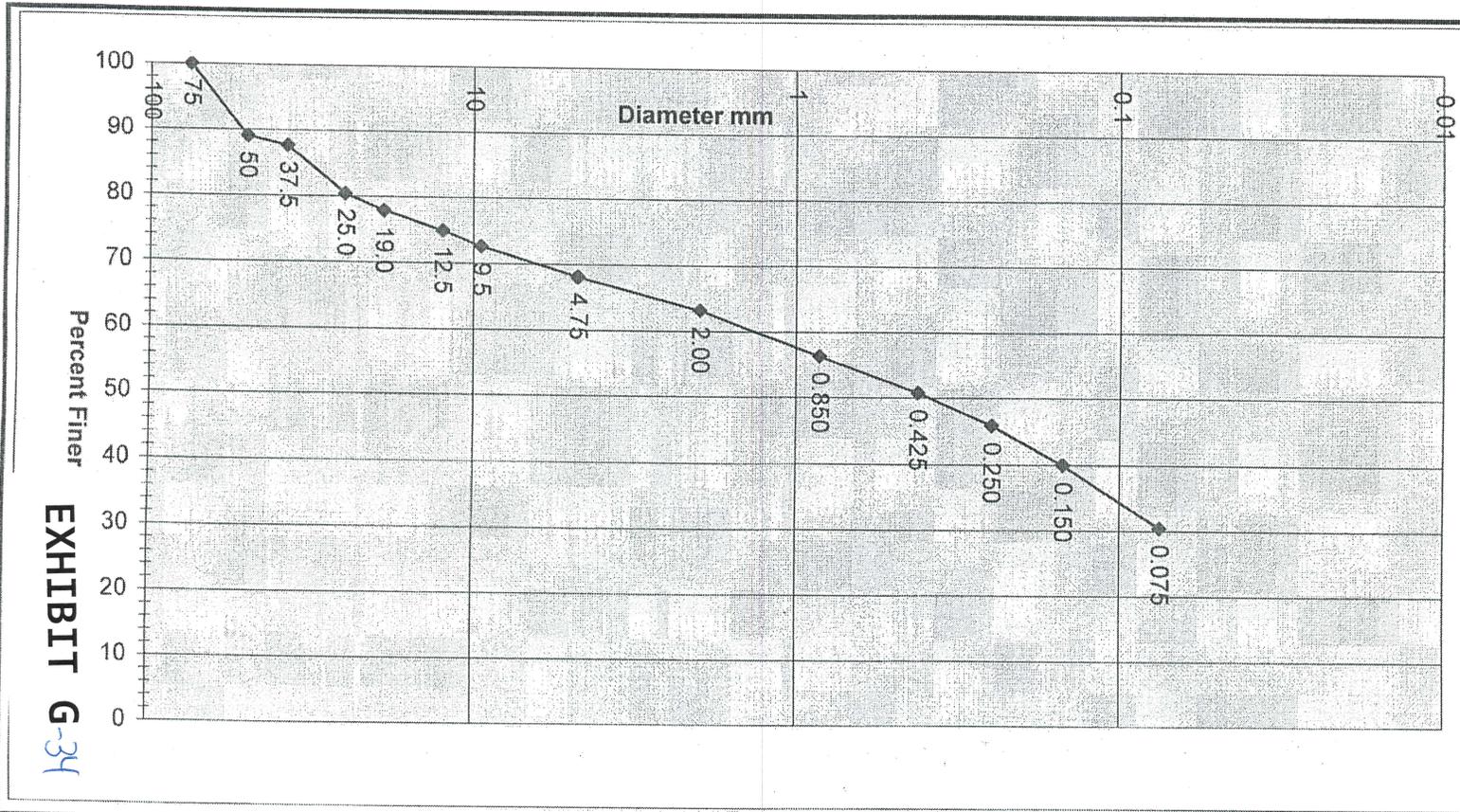
- PERCOLATION RATE _____ (min/inch) PERC HOLE DIAMETER _____
 - TEST RUN BETWEEN FT AND FT DEPTH
 - COMMENTS: Testhole for subdivision only, for any other use contact Holler Engineering
Sample taken at 5-6', Monitor pipe installed to 7'
 - PERFORMED BY: J. Wilkins DATE: 11/4/19

EXHIBIT G-33



MARK HANSEN P.E.

CONSULTING ENGINEERS TESTING LABORATORY
 2605 N. Old Glenn Hwy, Palmer, AK 99645 Phone: (907) 745-4721
 e-mail: mhpe@mtaonline.net



Sieve	Diameter mm	Percent Finer
3"	75	100
2"	50	89
1.5"	37.5	88
1"	25.0	80
3/4"	19.0	78
1/2"	12.5	75
3/8"	9.5	73
#4	4.75	68
#10	2.00	63
#20	0.850	56
#40	0.425	51
#60	0.250	46
#100	0.150	40
#200	0.075	30.4

Client: **Hanson LS / Holler Eng**

Soil Description: Silty Sand with Gravel

Project: **Goodwin Estates.**

Unified Classification: SM

Sample Location: TH# 24 @ 5' - 6'

Date: 11/14/2019

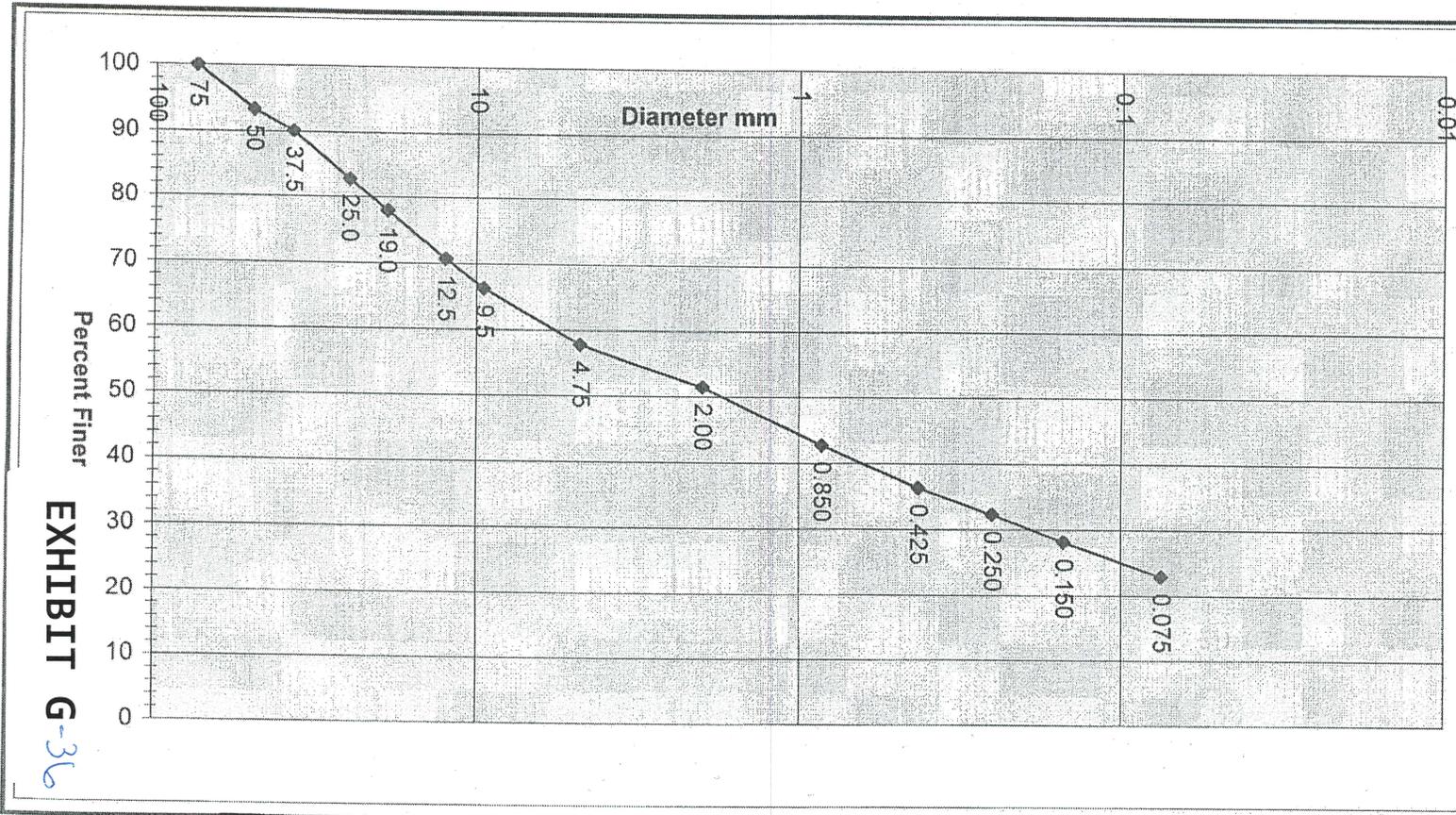
Sample Date: 11/4/2019

Proj. no: 19137



MARK HANSEN P.E.

CONSULTING ENGINEERS TESTING LABORATORY
 2605 N. Old Glenn Hwy, Palmer, AK 99645 Phone: (907) 745-4721
 e-mail: mhpe@mtaonline.net



Sieve	Diameter mm	Percent Finer
3"	75	100
2"	50	93
1.5"	37.5	90
1"	25.0	83
3/4"	19.0	78
1/2"	12.5	71
3/8"	9.5	66
#4	4.75	58
#10	2.00	51
#20	0.850	43
#40	0.425	36
#60	0.250	32
#100	0.150	28
#200	0.075	22.9

EXHIBIT G-36

Client: **Hanson LS / Holler Eng**

Soil Description: Silty Gravel with Sand

Project: **Goodwin Estates.**

Unified Classification: GM

Sample Location: TH# 25 @ 8' - 9'

Date: 11/14/2019

Sample Date: 11/4/2019

Proj. no: 19137



HOLLER ENGINEERING

3375 N Sams Dr. Wasilla, Alaska 99654 376-0410

Seal



SOILS LOG / PERCOLATION TEST

TEST HOLE # 26 of 38

Performed For: Hanson LS/ Goodwin

Legal Description: Goodwin Estates

Depth, feet

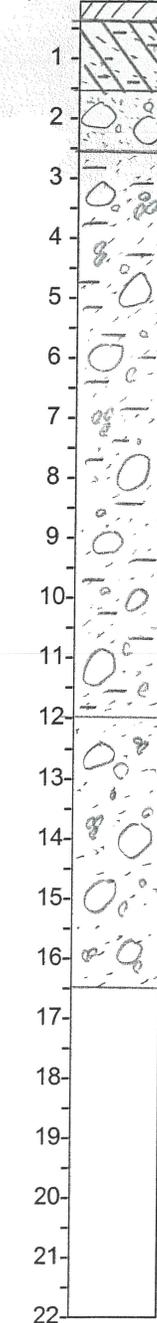
Soil Type

Slope

Site Plan



See attached testhole & topo map.



1 OL

2 ML, varies to SM-ML

3 SP-GP, olive gray, rock to 10", sloughs.

4 SM-GM, varies to SM with gravel, rock to 4", few 10"+, Consolidated.

5

6

7

8

9

10

11

12

13 SP-GP, olive gray, sloughs, rock to 6", few 10"+

14

15

16 No Groundwater

17 No Impermeables.

WAS GROUNDWATER ENCOUNTERED?

- No

IF YES, AT WHAT DEPTH?

- N/A

DEPTH AFTER MONITORING?

- N/A

Slope

PERCOLATION TEST

Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
N/A visual analysis only					

- PERCOLATION RATE _____ (min/inch) PERC HOLE DIAMETER _____

- TEST RUN BETWEEN FT AND FT DEPTH

- COMMENTS: Testhole for subdivision only, for any other use contact Holler Engineering

* Supplemental testhole information only *

- PERFORMED BY: J. Wilkins

DATE: 11/5/19

EXHIBIT G-37



HOLLER ENGINEERING

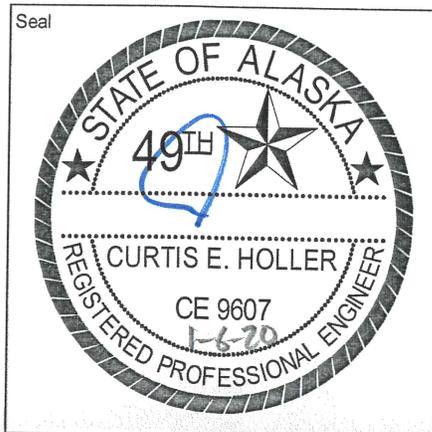
3375 N Sams Dr. Wasilla, Alaska 99654 376-0410

SOILS LOG / PERCOLATION TEST

TEST HOLE # 28 of 38

Performed For: Hanson LS / Goodwin

Legal Description: Goodwin Estates



Depth, feet	Soil Type
1	OL
2	ML, varies to SM-ML
3	SP-GP, olive brown, rocks to 8", few 10"+
4	
5	
6	SP-GP, heavy trace silt, varies to SM-GM
7	
8	SM-GM, light gray, dense, consolidated, stands well.
9	
10	
11	
12	
13	
14	
15	
16	No Groundwater No Impermeables
17	
18	
19	
20	
21	
22	

Slope

Site Plan

See attached testhole & topo map.

↑
N
↓

Sample →

WAS GROUNDWATER ENCOUNTERED?
- No

IF YES, AT WHAT DEPTH?
- N/A

DEPTH AFTER MONITORING?
- N/A

Slope

PERCOLATION TEST					
Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
		N/A visual analysis only			

- PERCOLATION RATE _____ (min/inch) PERC HOLE DIAMETER _____

- TEST RUN BETWEEN 8 FT AND _____ FT DEPTH

- COMMENTS: Testhole for subdivision only, for any other use contact Holler Engineering
Sample taken at 8'-10'

- PERFORMED BY: J. Wilkins

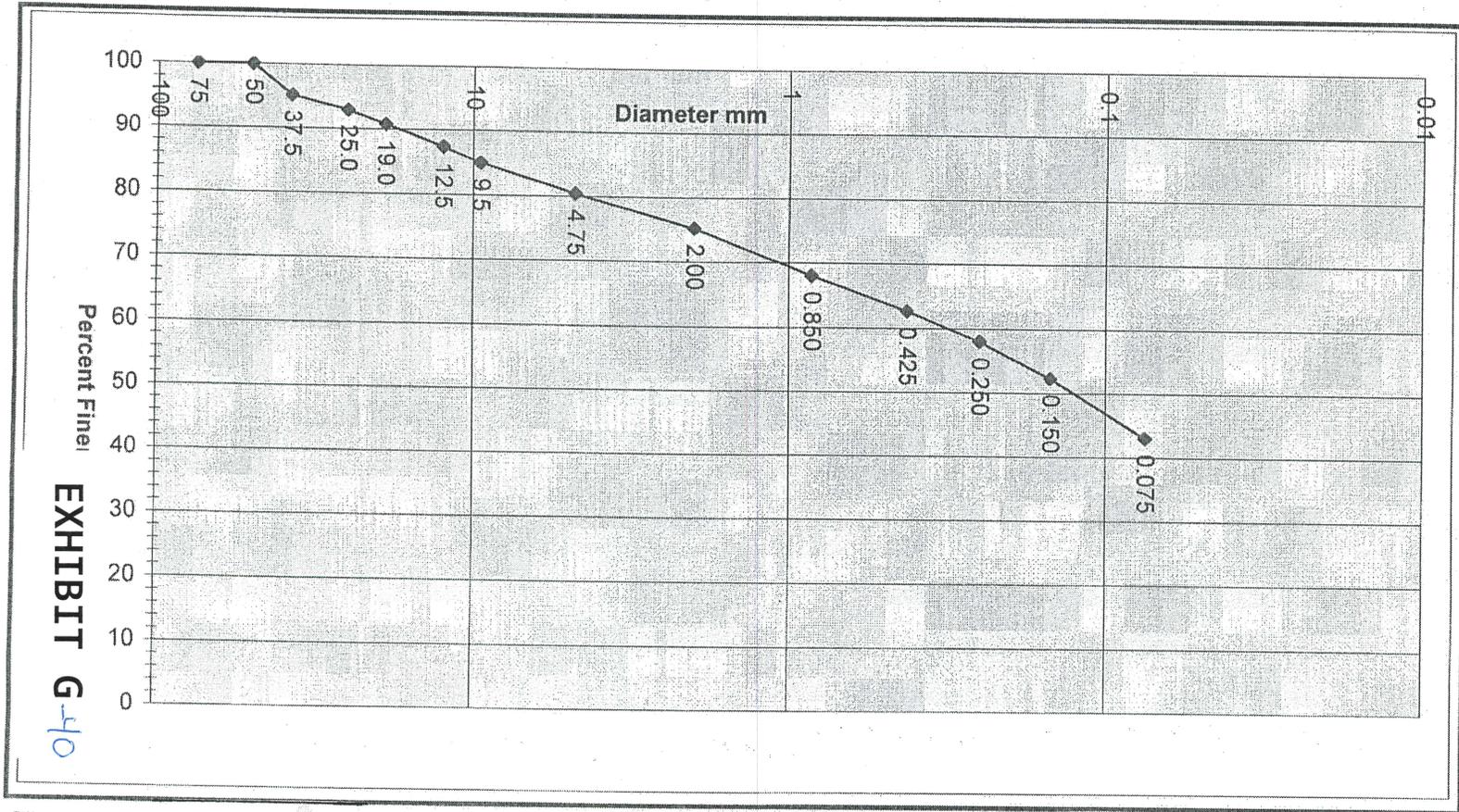
DATE: 11/5/19

EXHIBIT G-39



MARK HANSEN P.E.

CONSULTING ENGINEERS TESTING LABORATORY
 2605 N. Old Glenn Hwy, Palmer, AK 99645 Phone: (907) 745-4721
 e-mail: mhpe@mtaonline.net



Sieve	Diameter mm	Percent Finer
3"	75	100
2"	50	100
1.5"	37.5	95
1"	25.0	93
3/4"	19.0	91
1/2"	12.5	87
3/8"	9.5	85
#4	4.75	80
#10	2.00	75
#20	0.850	68
#40	0.425	63
#60	0.250	58
#100	0.150	52
#200	0.075	43.0

EXHIBIT G-40

Client: **Hanson LS / Holler Eng**

Soil Description: Silty Sand with Gravel

Project: **Goodwin Estates.**

Unified Classification: SM

Sample Location: TH# 28 @ 8' - 10'

Date: 11/14/2019

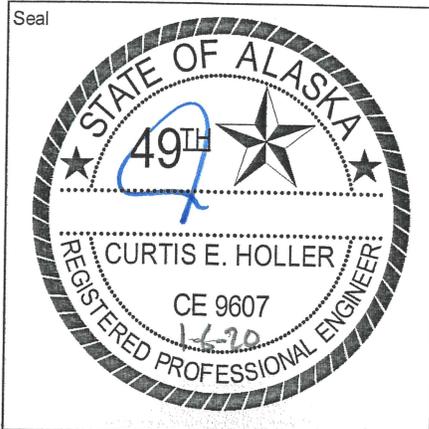
Sample Date: 11/5/2019

Proj. no: 19137



HOLLER ENGINEERING

3375 N Sams Dr. Wasilla, Alaska 99654 376-0410



SOILS LOG / PERCOLATION TEST

TEST HOLE # 31 of 38

Performed For: Hanson LS/Goodwin

Legal Description: Goodwin Estates

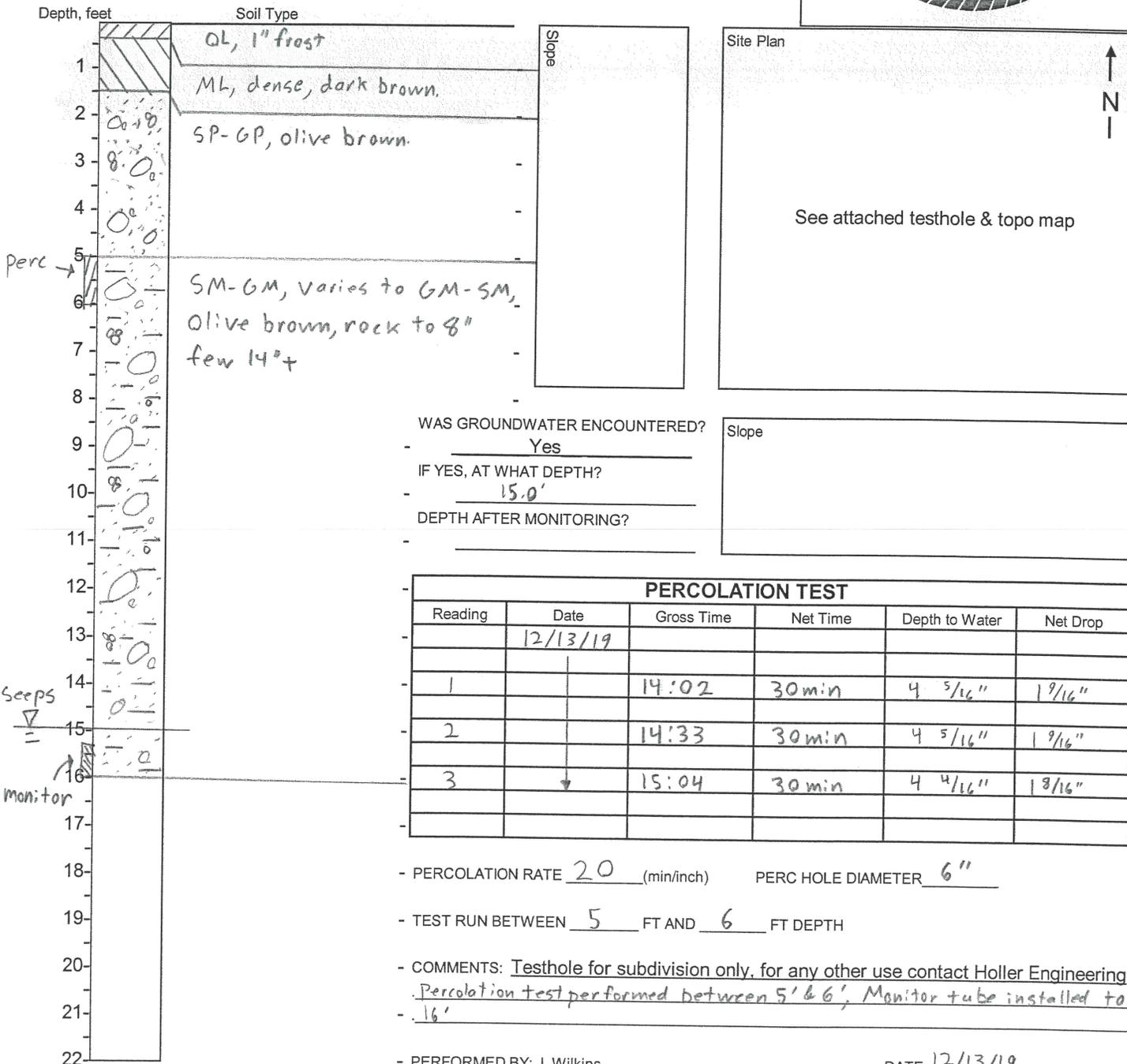
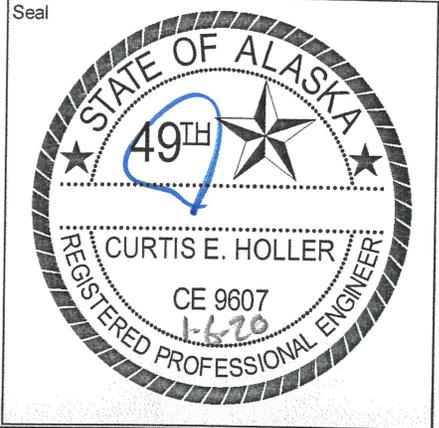


EXHIBIT G-43



HOLLER ENGINEERING

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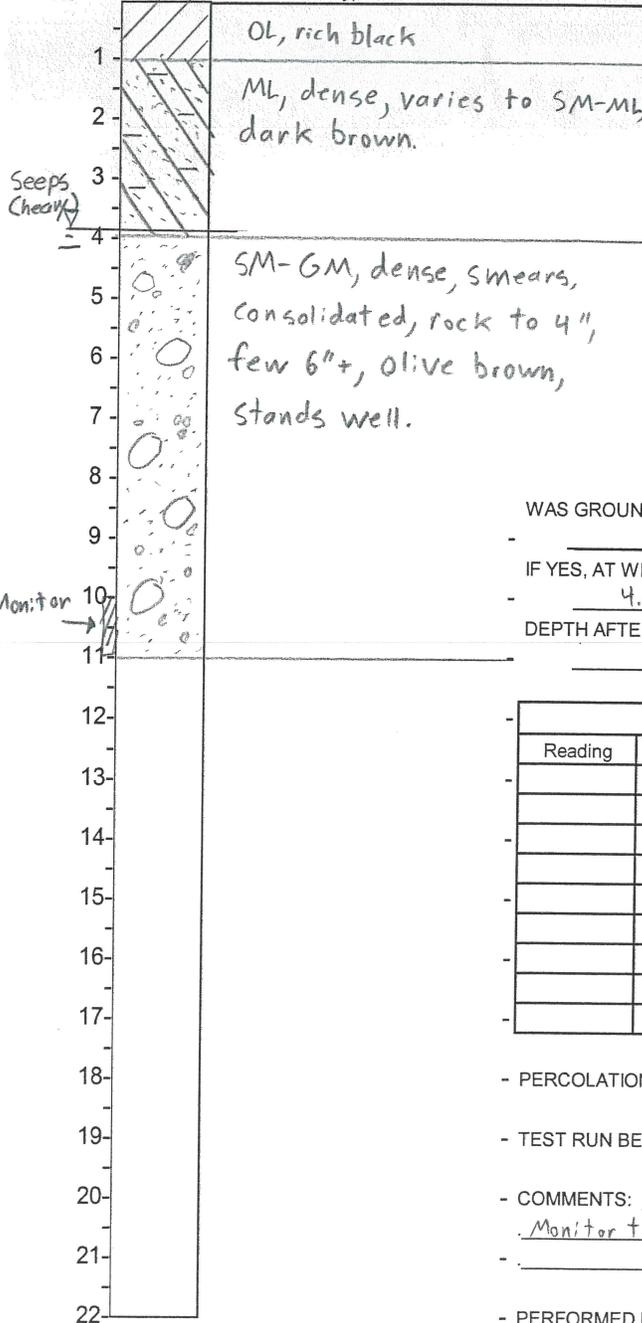
SOILS LOG / PERCOLATION TEST

TEST HOLE # 33 of 38

Performed For: Hanson LS/Goodwin

Legal Description: Goodwin Estates

Depth, feet Soil Type



Slope

Site Plan
See attached testhole & topo map

WAS GROUNDWATER ENCOUNTERED?
 - Yes
 IF YES, AT WHAT DEPTH?
 - 4.0' (Seeps, heavy)
 DEPTH AFTER MONITORING?

Slope

PERCOLATION TEST					
Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
N/A visual analysis only					

- PERCOLATION RATE _____ (min/inch) PERC HOLE DIAMETER _____

- TEST RUN BETWEEN FT AND _____ FT DEPTH

- COMMENTS: Testhole for subdivision only, for any other use contact Holler Engineering
Monitor tube installed to 11'

- PERFORMED BY: J. Wilkins DATE: 12/16/19

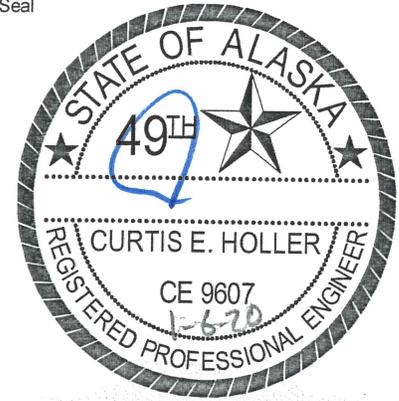
EXHIBIT G-45



HOLLER ENGINEERING

3375 N Sams Dr. Wasilla, Alaska 99654 376-0410

Seal



SOILS LOG / PERCOLATION TEST

TEST HOLE # 34 of 38

Performed For: Hanson LS / Goodwin

Legal Description: Goodwin Estates

Depth, feet	Soil Type
1	OL
2	ML, dense, olive brown
3	
4	SM-GM, varies to SP-GP
5	with silt, rock to 5", few
6	8"x, olive gray, few 12"+
7	boulders
8	
9	
10	
11	
12	
13	
14	
15	
16	NO Groundwater No Impermeables
17	
18	
19	
20	
21	
22	

Slope

Site Plan

See attached testhole & topo map.

N ↑

WAS GROUNDWATER ENCOUNTERED?
- No

IF YES, AT WHAT DEPTH?
- N/A

DEPTH AFTER MONITORING?
- N/A

Slope

PERCOLATION TEST					
Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
	12/16/19				
1		13:57	30 min	6-4/16"	1-8/16"
2		14:28	30 min	6-3/16"	1-7/16"
3		14:59	30 min	6-2/16"	1-6/16"

- PERCOLATION RATE 22 (min/inch) PERC HOLE DIAMETER 6"

- TEST RUN BETWEEN 5 FT AND 6 FT DEPTH

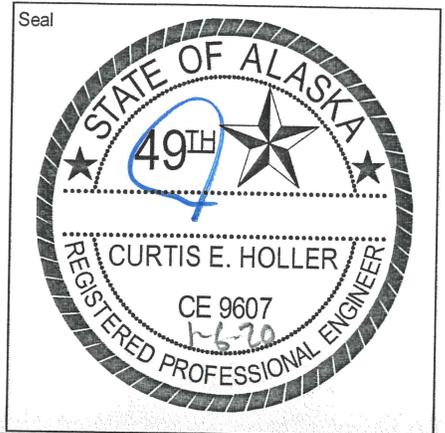
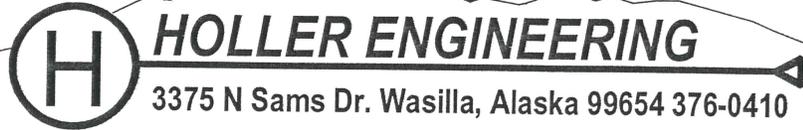
- COMMENTS: Testhole for subdivision only, for any other use contact Holler Engineering

-

- PERFORMED BY: J. Wilkins

DATE: 12/16/19

EXHIBIT G-46

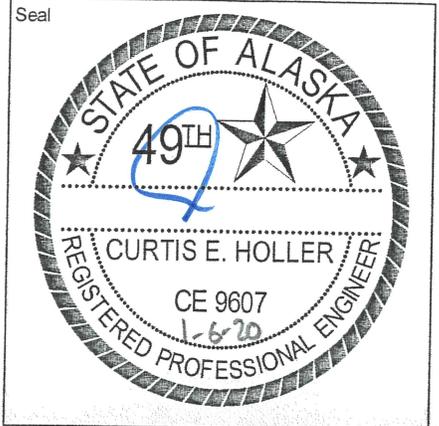
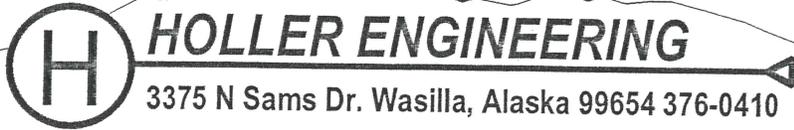


SOILS LOG / PERCOLATION TEST

TEST HOLE # 36 of 38
 Performed For: Hanson LS/ Goodwin
 Legal Description: Goodwin Estates

Depth, feet	Soil Type	Slope	Site Plan			
1	OL, dense, dark brown/black		See attached testhole & topo map.			
2	ML, dense, dark brown					
3	SM-GM, dense, olive gray, rock to 5", few 7", Stands Well		↑ N ↓ See attached testhole & topo map.			
4						
5						
6						
7						
8						
9	WAS GROUNDWATER ENCOUNTERED? - <u>No</u>		Slope			
10	IF YES, AT WHAT DEPTH? - <u>N/A</u>					
11	DEPTH AFTER MONITORING? - <u>N/A</u>					
12						
PERCOLATION TEST						
	Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
		<u>12/16/19</u>				
13	<u>1</u>		<u>14:33</u>	<u>10 min</u>	<u>4-8/16"</u>	<u>2-5/16"</u>
14	<u>2</u>		<u>14:45</u>	<u>10 min</u>	<u>4-7/16"</u>	<u>2-5/16"</u>
15	<u>3</u>		<u>14:56</u>	<u>10 min</u>	<u>4-7/16"</u>	<u>2-5/16"</u>
16	<u>4</u>		<u>15:07</u>	<u>10 min</u>	<u>4-7/16"</u>	<u>2-5/16"</u>
17	<u>5</u>		<u>15:17</u>	<u>10 min</u>	<u>4-7/16"</u>	<u>2-5/16"</u>
18	<u>6</u>		<u>15:28</u>	<u>10 min</u>	<u>4-7/16"</u>	<u>2-5/16"</u>
19	No Groundwater No Impermeables					
20	- PERCOLATION RATE <u>4</u> (min/inch) PERC HOLE DIAMETER <u>6"</u>					
21	- TEST RUN BETWEEN <u>5</u> FT AND <u>6</u> FT DEPTH					
22	- COMMENTS: <u>Testhole for subdivision only, for any other use contact Holler Engineering</u>					
	- PERFORMED BY: J. Wilkins					
	DATE: <u>12/16/19</u>					

EXHIBIT G-48

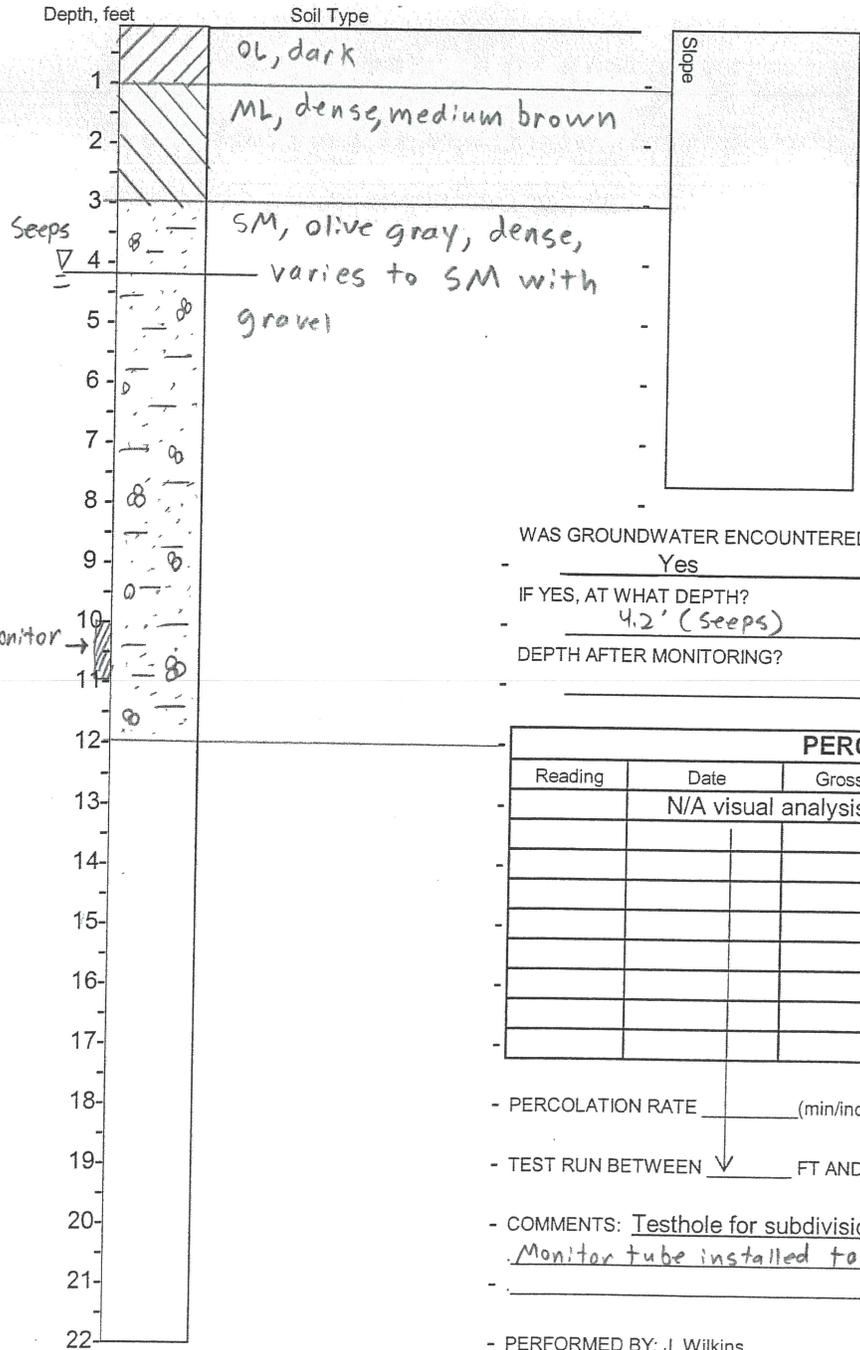


SOILS LOG / PERCOLATION TEST

TEST HOLE # 37 of 38

Performed For: Hanson LS/Goodwin

Legal Description: Goodwin Estates



Site Plan

See attached testhole & topo map

N ↑

WAS GROUNDWATER ENCOUNTERED? Yes

IF YES, AT WHAT DEPTH? 4.2' (Seeps)

DEPTH AFTER MONITORING? _____

Slope

Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop
N/A visual analysis only					

- PERCOLATION RATE _____ (min/inch) PERC HOLE DIAMETER _____

- TEST RUN BETWEEN 4.2 FT AND _____ FT DEPTH

- COMMENTS: Testhole for subdivision only, for any other use contact Holler Engineering
Monitor tube installed to 11'

- PERFORMED BY: J. Wilkins

DATE: 12/16/19

EXHIBIT G-49



HOLLER ENGINEERING

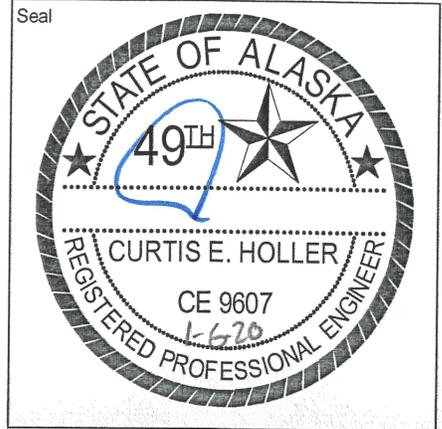
3375 N Sams Dr. Wasilla, Alaska 99654 376-0410

SOILS LOG / PERCOLATION TEST

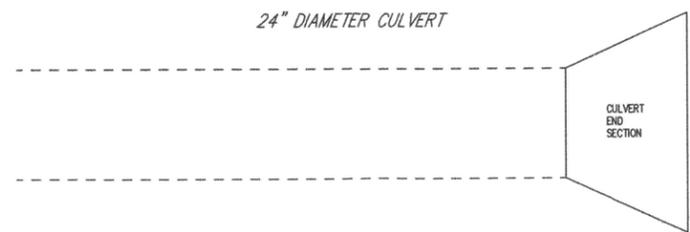
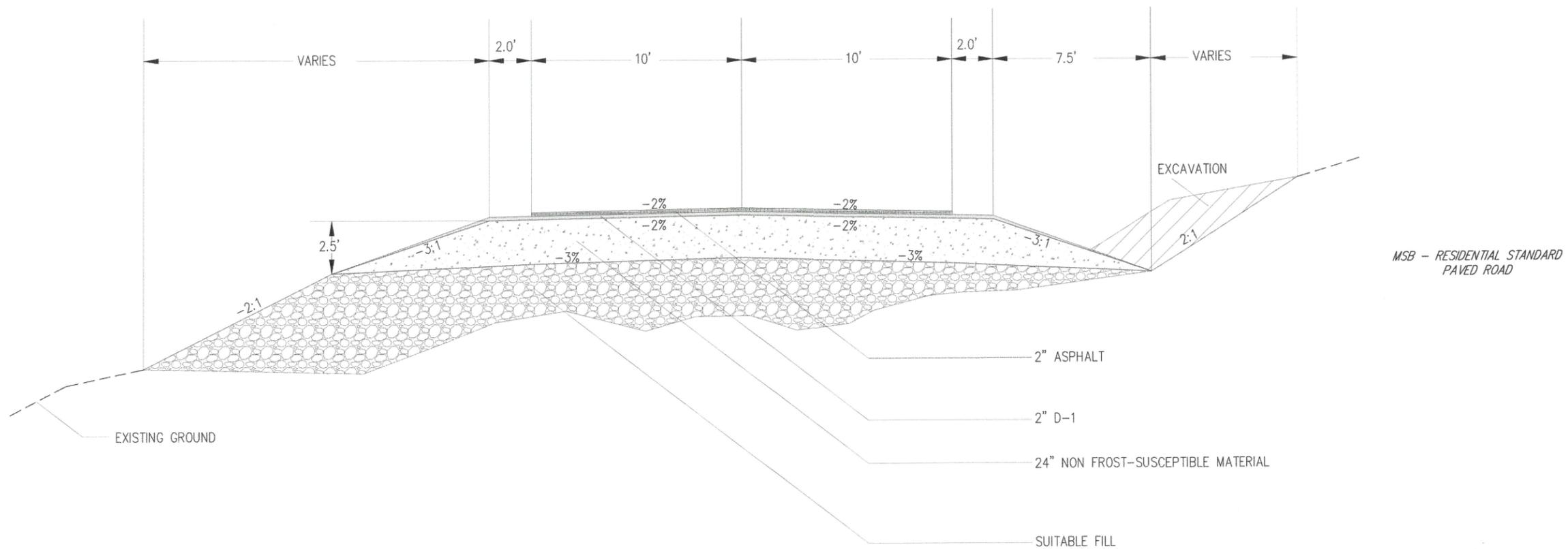
TEST HOLE # 38 of 38

Performed For: Hanson LS/Goodwin

Legal Description: Goodwin Estates



Depth, feet	Soil Type	Slope	Site Plan																																																																		
1	OL, frost to 6"		See attached testhole & topo map. <div style="text-align: right; margin-top: 20px;"> ↑ N ↓ </div>																																																																		
2	ML, dense, brown, dark																																																																				
3	SP-GP, olive gray, rock to 8", few 16"t, sloughs.																																																																				
4																																																																					
5																																																																					
6																																																																					
7																																																																					
8	SP-GP, heavy trace silt, varies to with silt, olive brown, rock to 6"	WAS GROUNDWATER ENCOUNTERED? - <u>No</u> IF YES, AT WHAT DEPTH? - <u>N/A</u> DEPTH AFTER MONITORING? - <u>N/A</u>																																																																			
9																																																																					
10																																																																					
11																																																																					
12	No GWT																																																																				
13	No Impermeables	PERCOLATION TEST <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th style="width: 15%;">Reading</th> <th style="width: 15%;">Date</th> <th style="width: 15%;">Gross Time</th> <th style="width: 15%;">Net Time</th> <th style="width: 15%;">Depth to Water</th> <th style="width: 15%;">Net Drop</th> </tr> </thead> <tbody> <tr> <td colspan="6" style="text-align: center;">N/A visual analysis only</td> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>		Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop	N/A visual analysis only																																																											
Reading	Date	Gross Time	Net Time	Depth to Water	Net Drop																																																																
N/A visual analysis only																																																																					
14		PERCOLATION RATE _____ (min/inch) PERC HOLE DIAMETER _____																																																																			
15		TEST RUN BETWEEN <u> </u> FT AND <u> </u> FT DEPTH																																																																			
16		COMMENTS: <u>Testhole for subdivision only, for any other use contact Holler Engineering</u>																																																																			
17		_____																																																																			
18		_____																																																																			
19		PERFORMED BY: J. Wilkins																																																																			
20		DATE: <u>1/06/19</u>																																																																			
21		EXHIBIT G-50																																																																			
22																																																																					



HANSON SURVEYING & MAPPING LLC
305 E. FIREWEED AVE.
PALMER, ALASKA 99645
(907)746-7738



NOTES
1. ROAD CONSTRUCTION TO FOLLOW MSB SUBDIVISION CONSTRUCTION MANUAL RESIDENTIAL STANDARDS.

PALMER, ALASKA
GOODWIN ESTATES
TYPICAL SECTIONS

RECEIVED

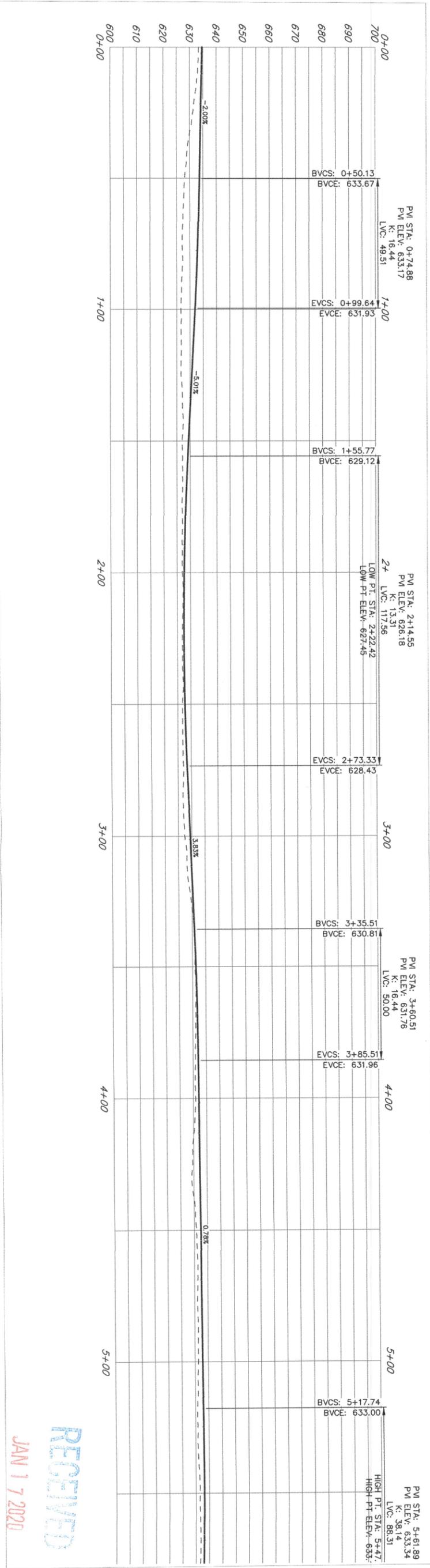
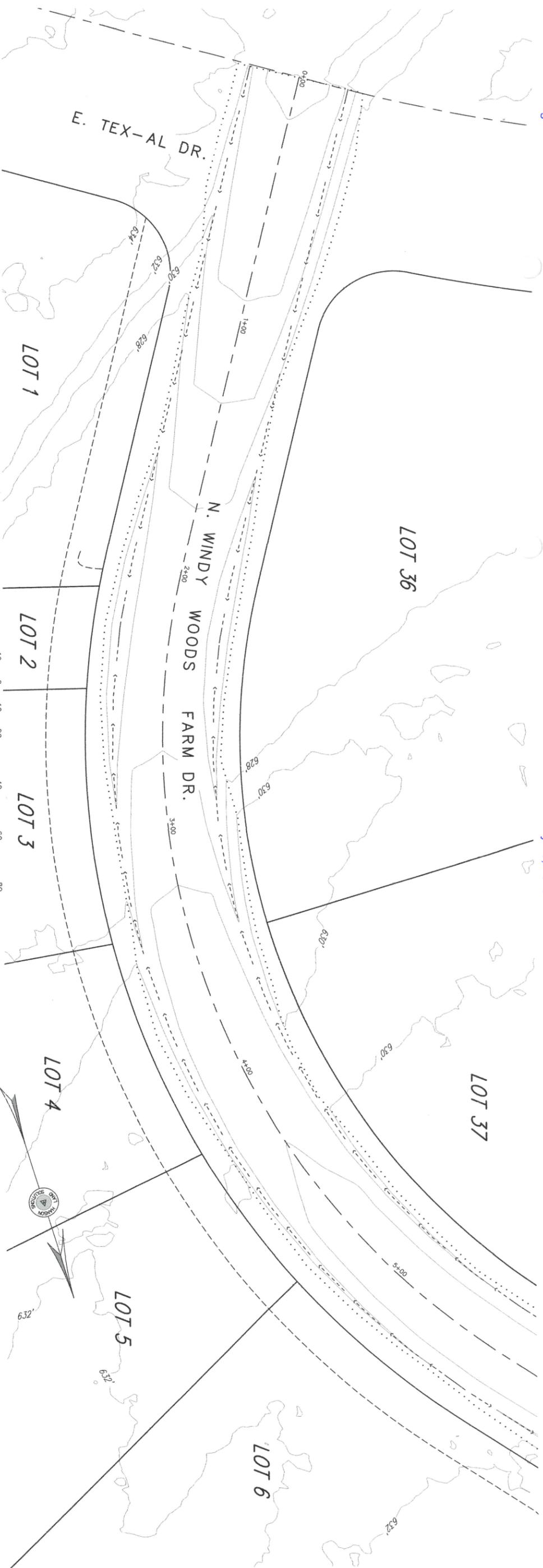
JAN 17 2020

PLATTING

EXHIBIT H-1

DWG.#: 19-282C
DESIGN: CEH
DRAWN BY: SDN
CHECKED: CEH
SCALE
11x17: 1"=XXX'
22x34: 1"=XXX'
REVISION DATE:
01-17-20

REFERENCE NUMBER:
C-3.1
SHEET 1 OF 11



NOTES
 1. THE 2' ORIGINAL GROUND CONTOURS SHOWN HEREON ARE DERIVED FROM PUBLISHED DATA OF THE MATANUSKA SUSITNA BOROUGH LIDAR/IMAGERY PROJECT OF 2011/2012.
 2. DESIGN EXCAVATION/CONSTRUCTION CONTOURS ARE DISPLAYED AT 2' CONTOUR INTERVAL



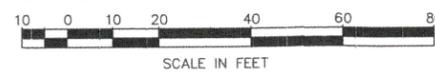
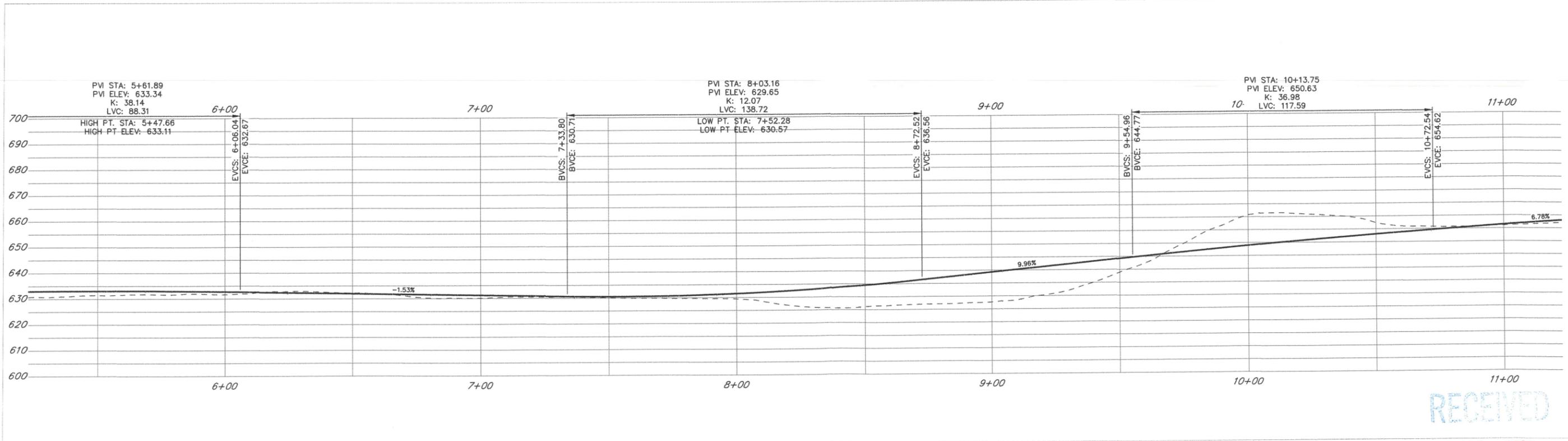
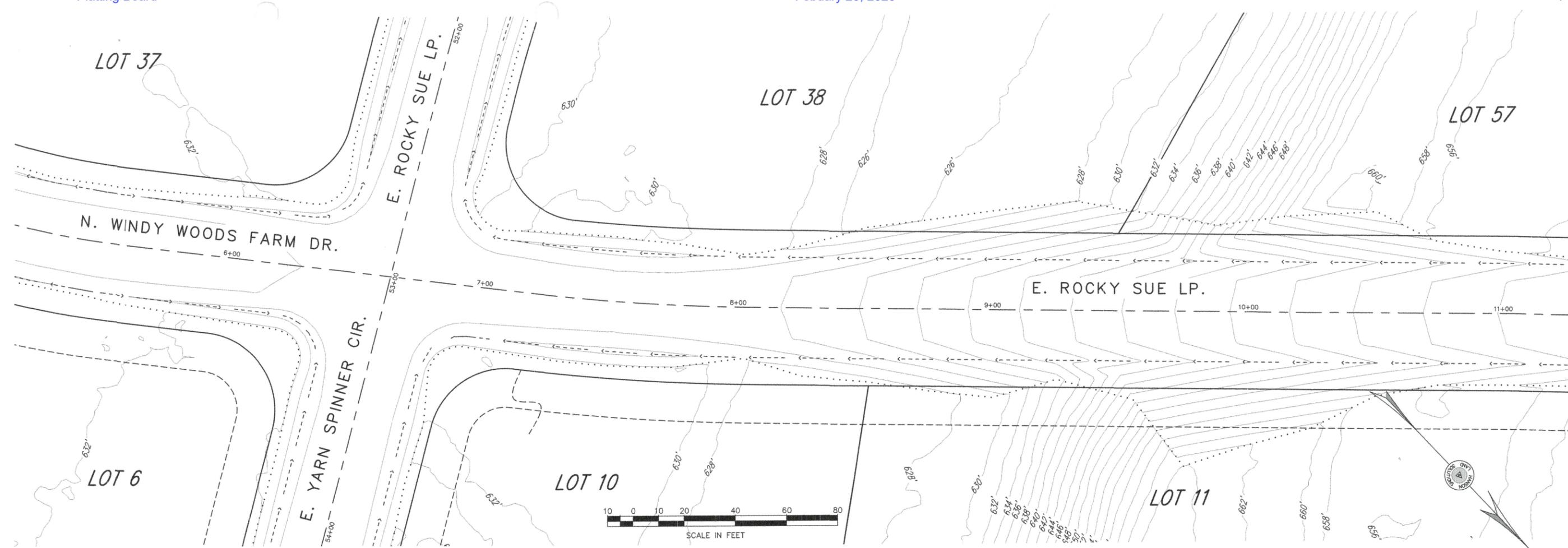
PALMER, ALASKA
 GOODWIN ESTATES
 PLAN AND PROFILE - DESIGN
 GOODWIN LOOP

DWG.#: 19-282C
 DESIGN: CEH
 DRAWN BY: SDN
 CHECKED: CEH
 SCALE
 1"=40'
 22x34: 1"=20'
 REVISION DATE:
 01-17-20

REFERENCE NUMBER:
 C-32.1
 SHEET 2 OF 11

RECEIVED
 JAN 17 2020

EXHIBIT H-2



HANSON SURVEYING & MAPPING LLC
305 E. FIREWEED AVE.
PALMER, ALASKA 99645
(907)746-7738



NOTES
1. THE 2' ORIGINAL GROUND CONTOURS SHOWN HEREON ARE DERIVED FROM PUBLISHED DATA OF THE MATANUSKA-SUSITNA BOROUGH LIDAR/IMAGERY PROJECT OF 2011/2012.
2. DESIGN EXCAVATION/CONSTRUCTION CONTOURS ARE DISPLAYED AT 2' CONTOUR INTERVAL

PALMER, ALASKA
GOODWIN ESTATES
PLAN AND PROFILE - DESIGN
GOODWIN LOOP

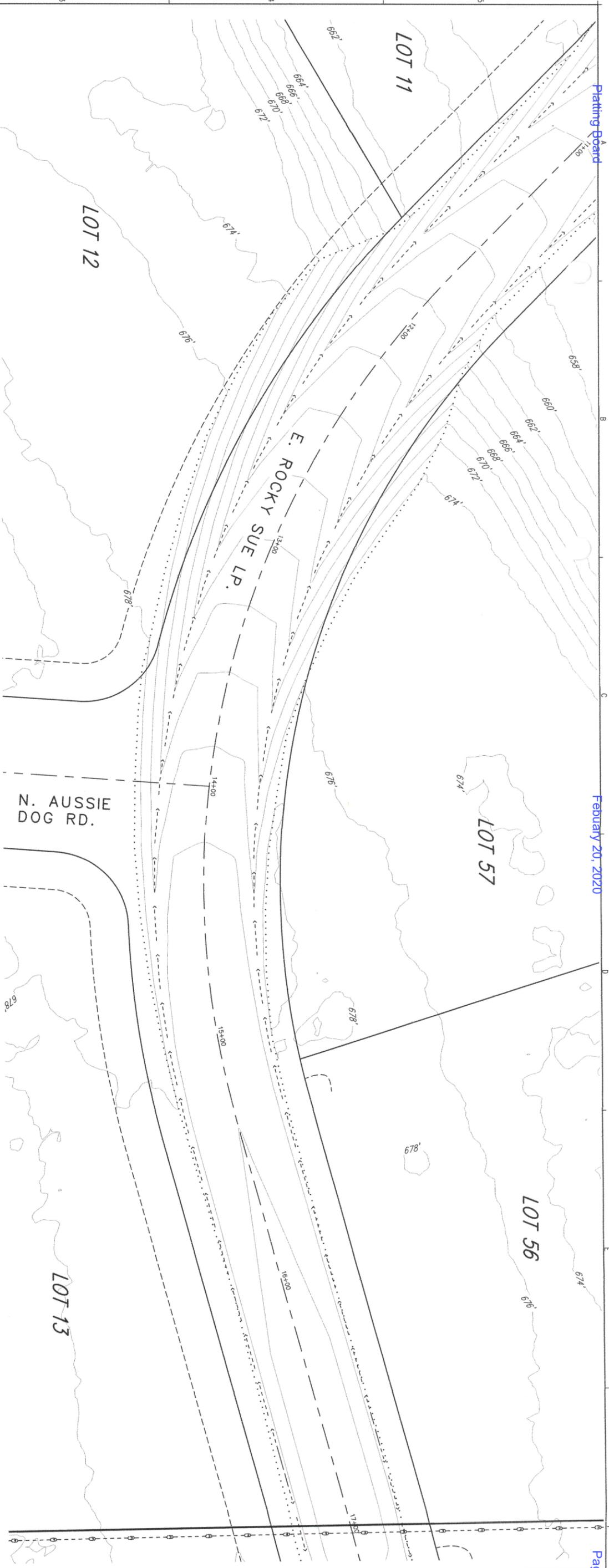
DWG.#: 19-282C
DESIGN: CEH
DRAWN BY: SDN
CHECKED: CEH
SCALE
11x17: 1" = 40'
22x34: 1" = 20'
REVISION DATE:
01-17-20

REFERENCE NUMBER:
C-3.2.2
SHEET 3 OF 11

RECEIVED

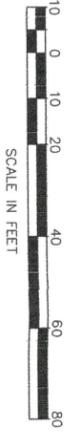
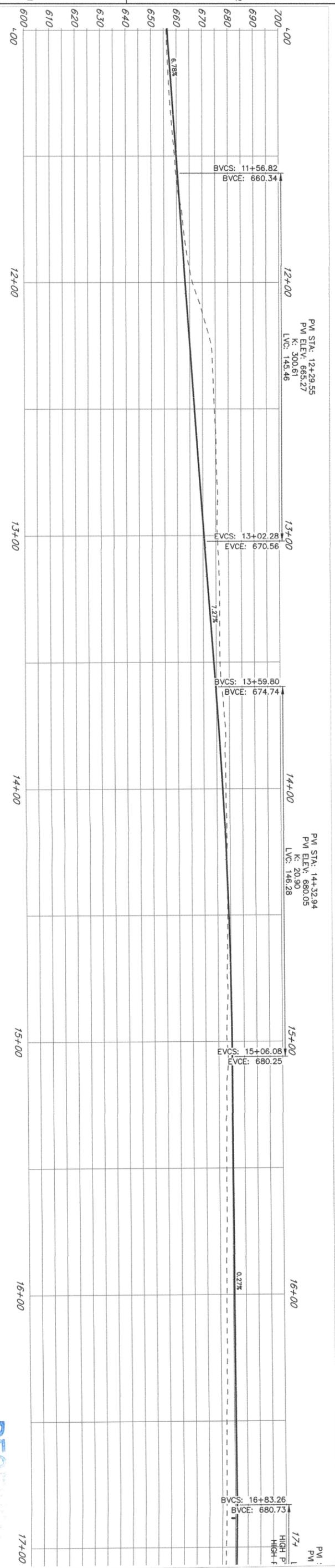
JAN 17 2020

EXHIBIT H-3



NOTES

1. THE 2' ORIGINAL GROUND CONTOURS SHOWN HEREON ARE DERIVED FROM PUBLISHED DATA OF THE MATANUSKA SUSITNA BOROUGH LIDAR/IMAGERY PROJECT OF 2011/2012.
2. DESIGN EXCAVATION/CONSTRUCTION CONTOURS ARE DISPLAYED AT 2' CONTOUR INTERVAL



PALMER, ALASKA
GOODWIN ESTATES
 PLAN AND PROFILE - DESIGN
 GOODWIN LOOP

DWG.#: 19-282C
 DESIGN: CEH
 DRAWN BY: SDN
 CHECKED: CEH
 SCALE
 11x17: 1"=40'
 22x34: 1"=20'
 REVISION DATE:
 01-17-20

REFERENCE NUMBER:
C-323
 SHEET 4 OF 11



HANSON SURVEYING & MAPPING LLC
 303 E. FREEDOM AVE.
 PALMER, ALASKA 99645
 (907) 746-7738

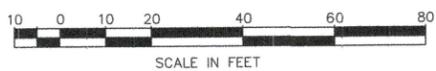
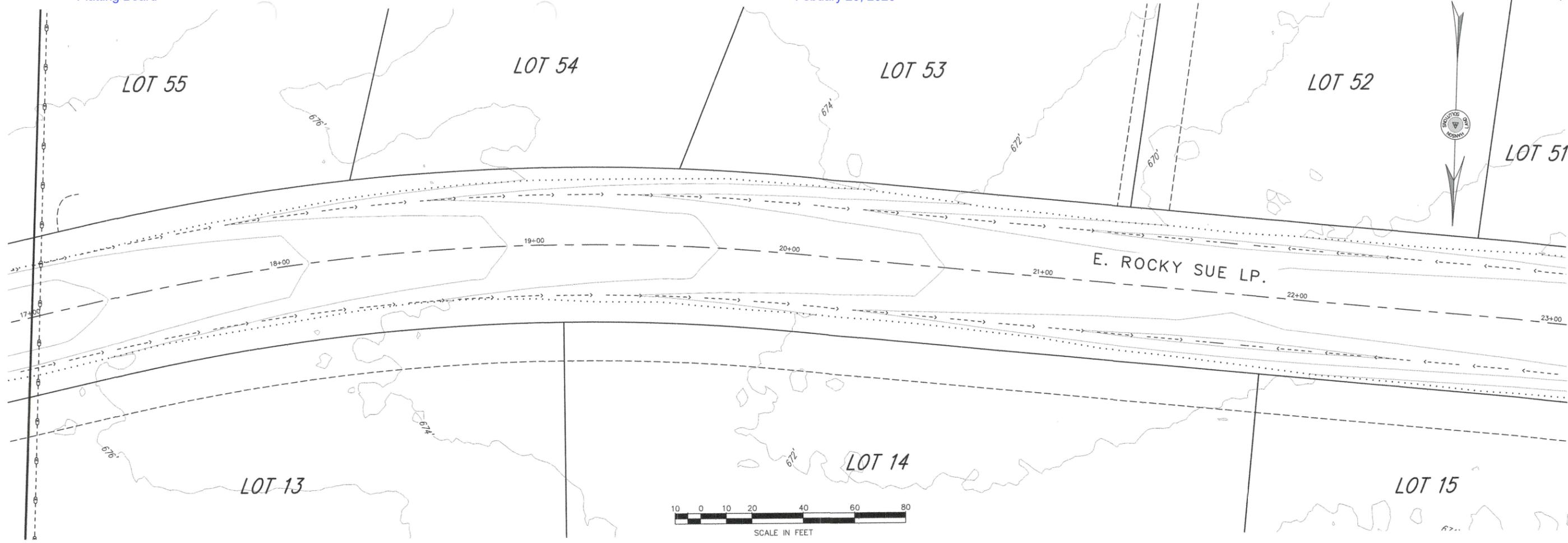


EXHIBIT H-4

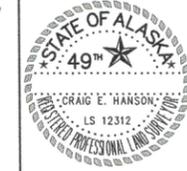
JAN 17 2020

RECEIVED

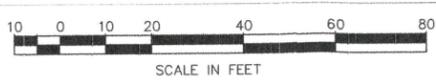
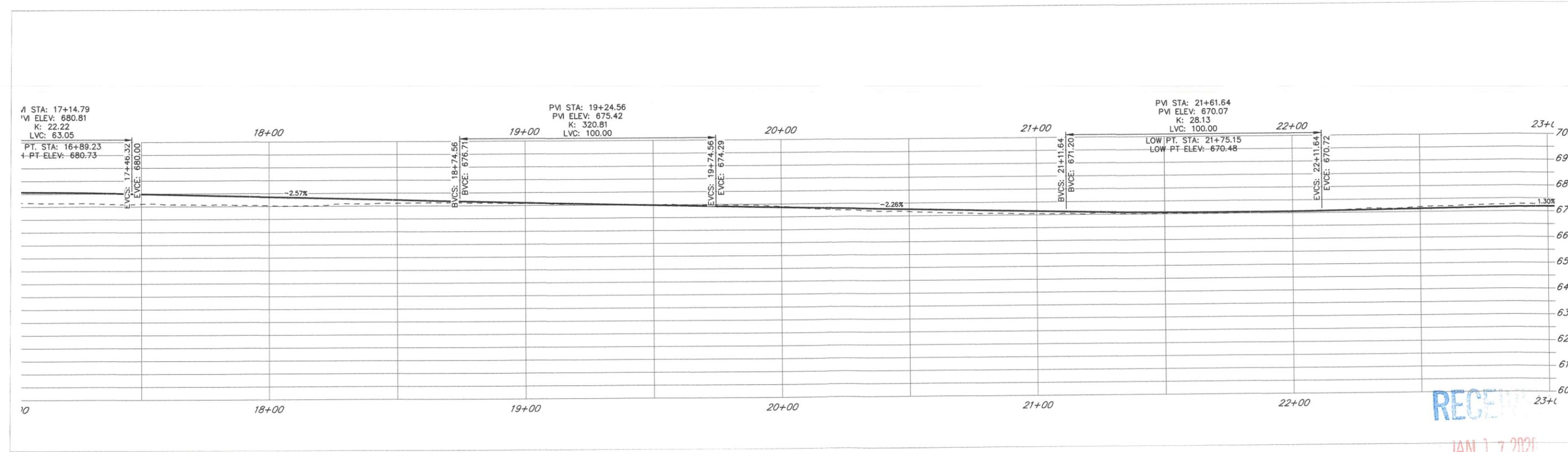
PLATTING



HANSON SURVEYING & MAPPING LLC
305 E. FIREWEED AVE.
PALMER, ALASKA 99645
(907)746-7738



NOTES
1. THE 2' ORIGINAL GROUND CONTOURS SHOWN HEREON ARE DERIVED FROM PUBLISHED DATA OF THE MATANUSKA-SUSITNA BOROUGH LIAR/IMAGERY PROJECT OF 2011/2012.
2. DESIGN EXCAVATION/CONSTRUCTION CONTOURS ARE DISPLAYED AT 2' CONTOUR INTERVAL



PALMER, ALASKA
GOODWIN ESTATES
PLAN AND PROFILE - DESIGN
GOODWIN LOOP

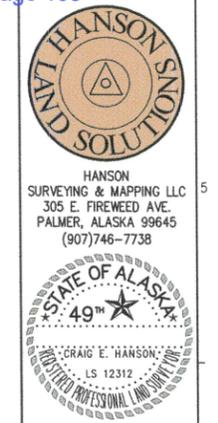
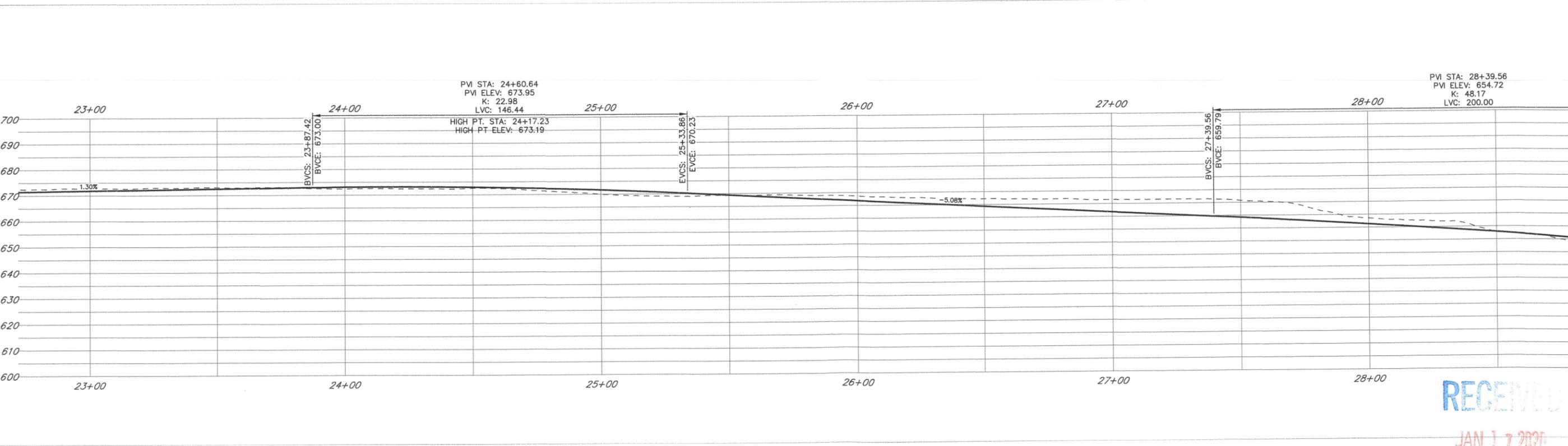
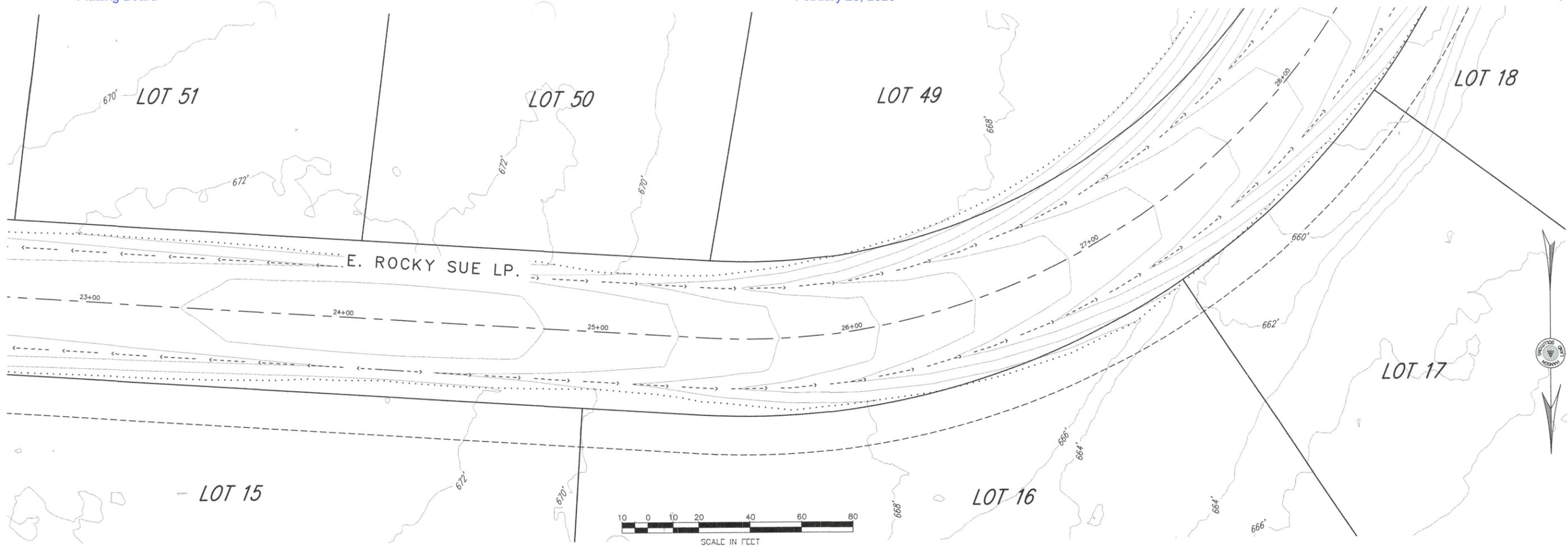
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DESIGN: CEH
DRAWN BY: SDN
CHECKED: CEH
SCALE
11x17: 1" = 40'
22x34: 1" = 20'
REVISION DATE:
01-17-20

REFERENCE NUMBER:
C-3.2.4
SHEET 5 OF 11

RECEIVED
JAN 17 2020

EXHIBIT H-5

PLATTING



NOTES
 1. THE 2' ORIGINAL GROUND CONTOURS SHOWN HEREON ARE DERIVED FROM PUBLISHED DATA OF THE MATANUSKA-SUSITNA BOROUGH LIDAR/IMAGERY PROJECT OF 2011/2012.
 2. DESIGN EXCAVATION/CONSTRUCTION CONTOURS ARE DISPLAYED AT 2' CONTOUR INTERVAL

PALMER, ALASKA
GOODWIN ESTATES
 PLAN AND PROFILE - DESIGN
 GOODWIN LOOP

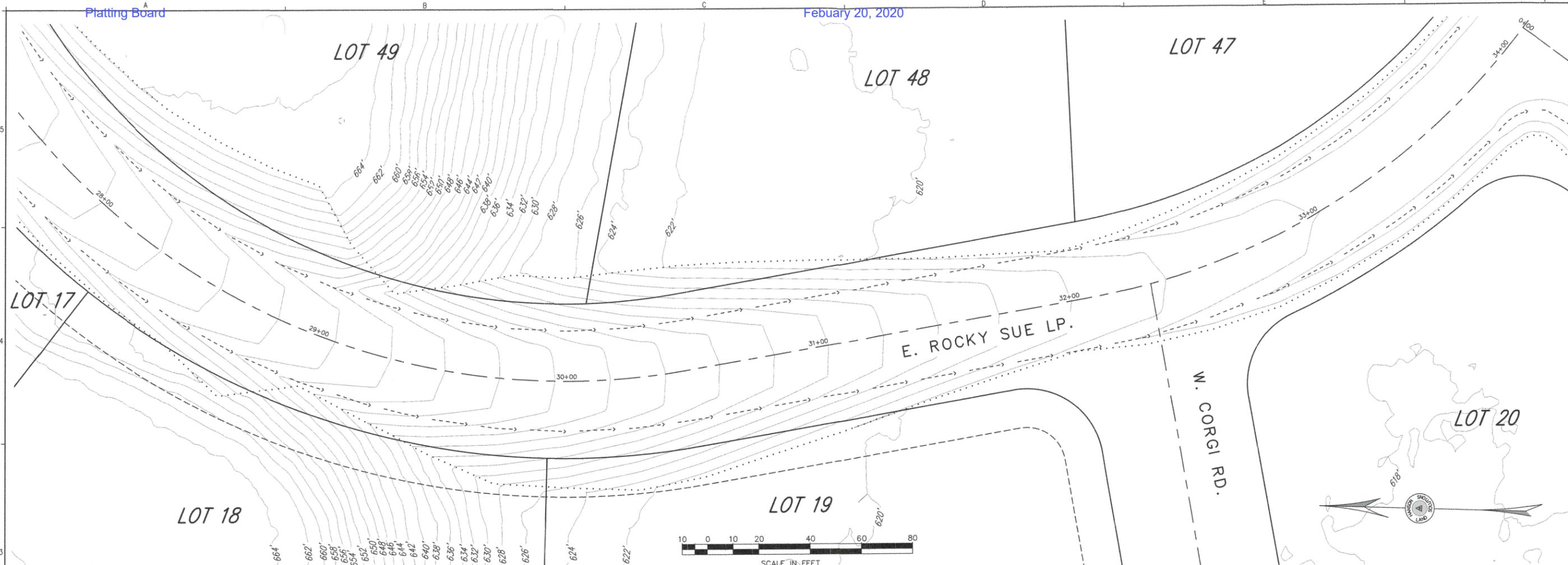
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 REVISION DATE:
 01-17-20

REFERENCE NUMBER:
 C-3.2.5
 SHEET 6 OF 11

RECEIVED
 JAN 17 2020
 PLATTING

EXHIBIT H-6



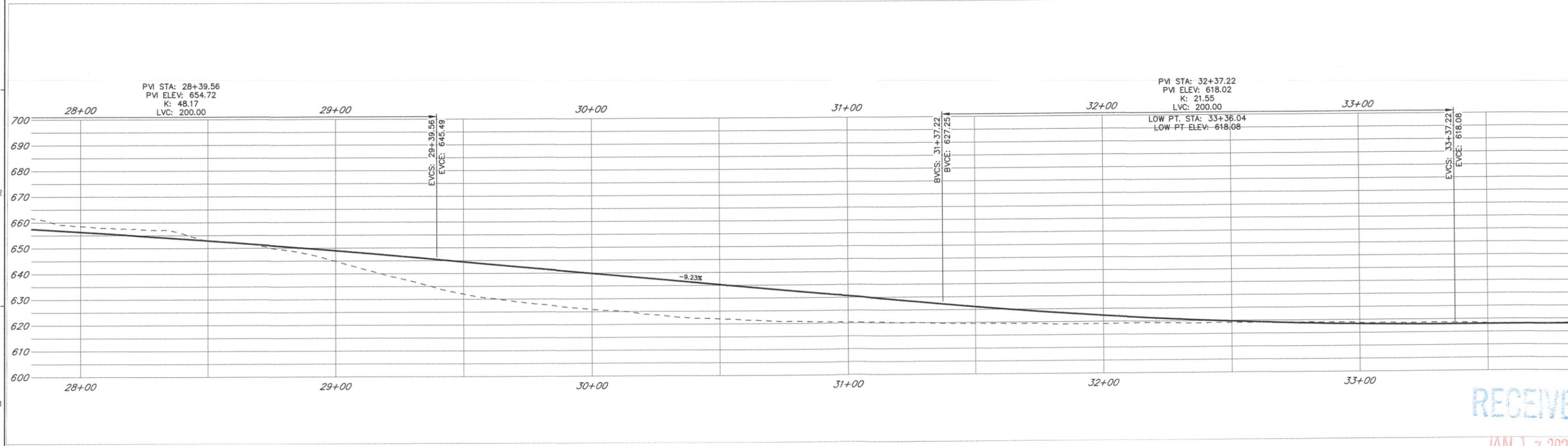


HANSON SURVEYING & MAPPING LLC
 305 E. FIREWEED AVE.
 PALMER, ALASKA 99645
 (907) 746-7738

STATE OF ALASKA
 49th
 CRAIG E. HANSON
 LS 12312
 PROFESSIONAL LAND SURVEYOR

NOTES

1. THE 2' ORIGINAL GROUND CONTOURS SHOWN HEREON ARE DERIVED FROM PUBLISHED DATA OF THE MATANUSKA-SUSITNA BOROUGH/LIDAR/IMAGERY PROJECT OF 2011/2012.
2. DESIGN EXCAVATION/CONSTRUCTION CONTOURS ARE DISPLAYED AT 2' CONTOUR INTERVAL



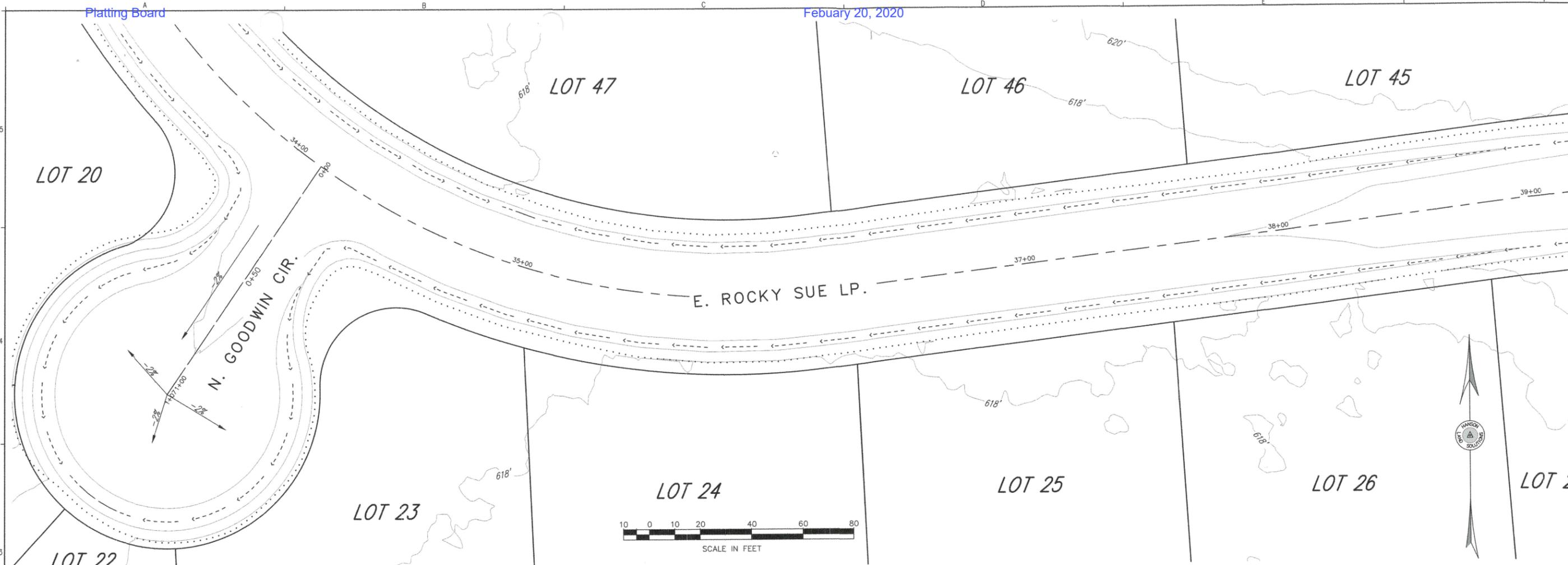
PALMER, ALASKA
GOODWIN ESTATES
 PLAN AND PROFILE - DESIGN
 GOODWIN LOOP

DWG. #: 19-282C
 DESIGN: CEH
 DRAWN BY: SDN
 CHECKED: CEH
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 22x34: 1" = 20'
 REVISION DATE:
 01-17-20

RECEIVED
 JAN 17 2020
 LATTING

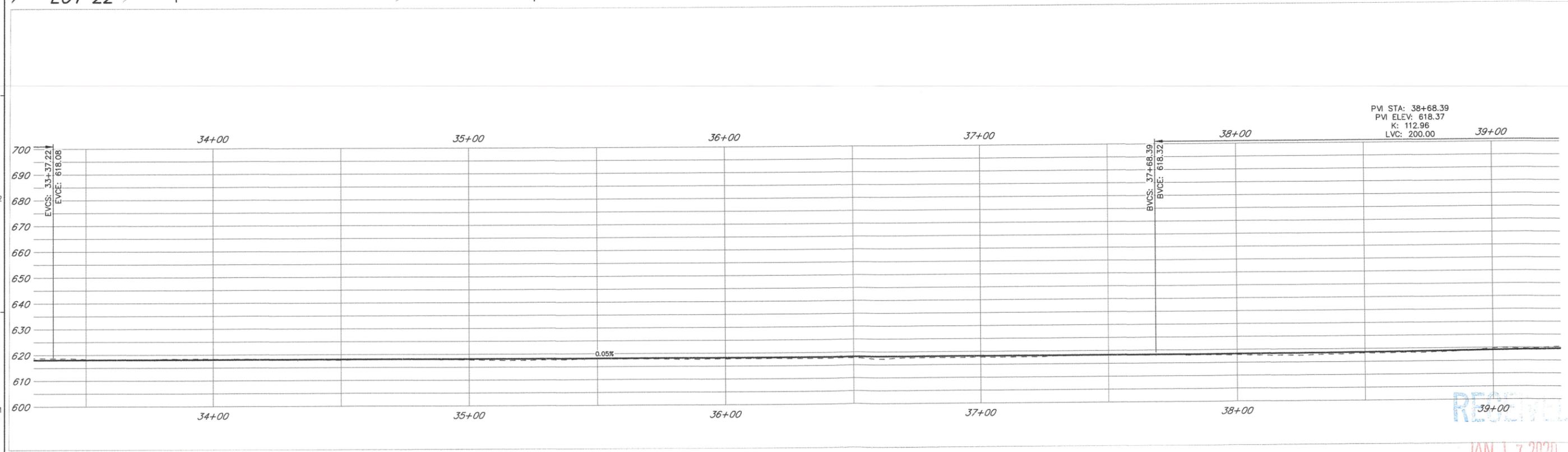
EXHIBIT H-7

REFERENCE NUMBER:
 C-3.2.6
 SHEET 7 OF 11



Professional seals for Hanson Surveying & Mapping LLC and the State of Alaska. The seal for the State of Alaska is for Craig E. Hanson, License Number LS 12312, a Professional Land Surveyor.

NOTES
 1. THE 2' ORIGINAL GROUND CONTOURS SHOWN HEREON ARE DERIVED FROM PUBLISHED DATA OF THE MATANUSKA-SUSITNA BOROUGH LIDAR/IMAGERY PROJECT OF 2011/2012.
 2. DESIGN EXCAVATION/CONSTRUCTION CONTOURS ARE DISPLAYED AT 2' CONTOUR INTERVAL



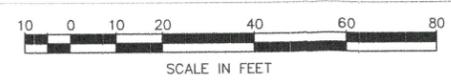
PALMER, ALASKA
 GOODWIN ESTATES
 PLAN AND PROFILE - DESIGN
 GOODWIN LOOP

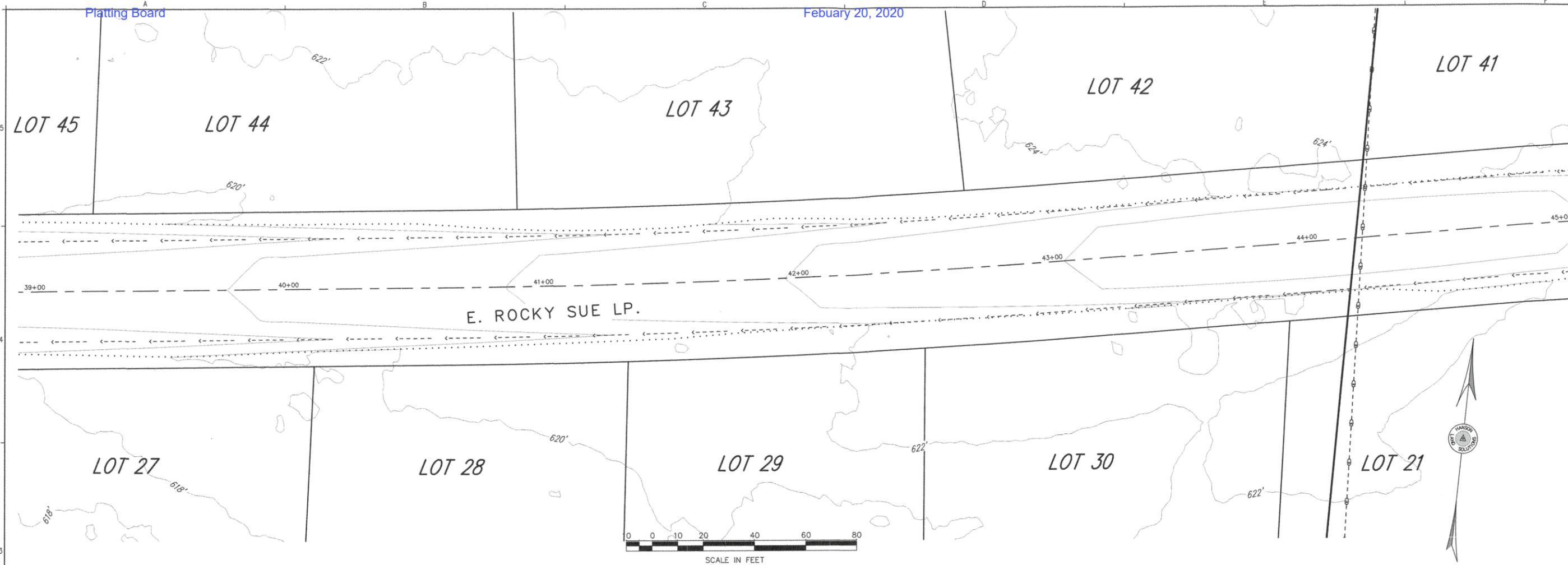
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 REVISION DATE:
 01-17-20

REFERENCE NUMBER:
 C-3.2.7
 SHEET 8 OF 11

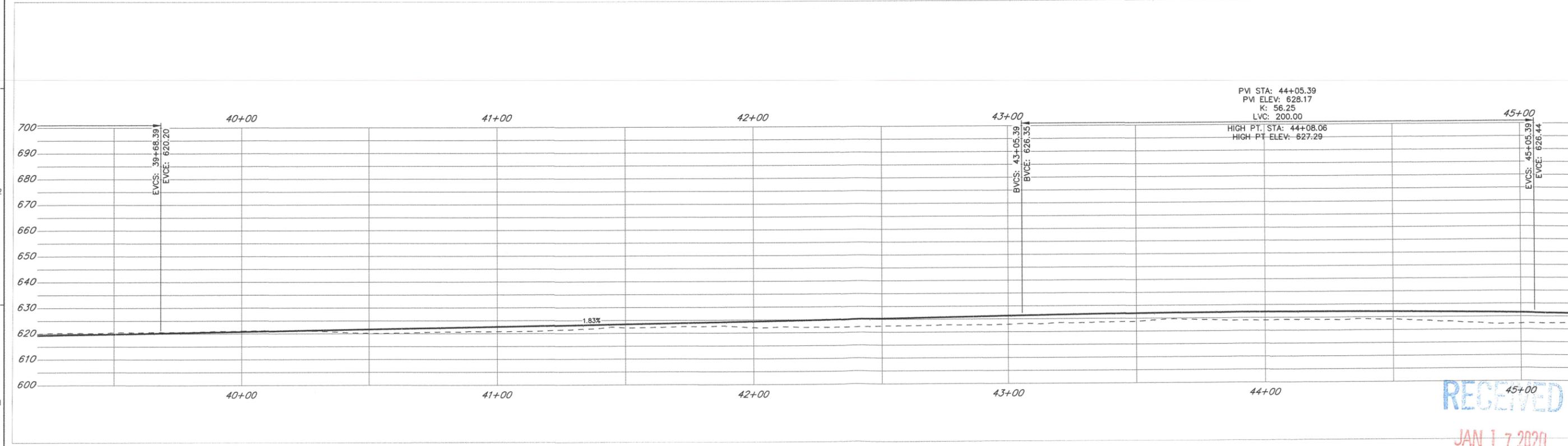
RECEIVED
 JAN 17 2020
 LATTING

EXHIBIT H-8





NOTES
 1. THE 2' ORIGINAL GROUND CONTOURS SHOWN HEREON ARE DERIVED FROM PUBLISHED DATA OF THE MATANUSKA-SUSTITNA BOROUGH LIDAR/IMAGERY PROJECT OF 2011/2012.
 2. DESIGN EXCAVATION/CONSTRUCTION CONTOURS ARE DISPLAYED AT 2' CONTOUR INTERVAL



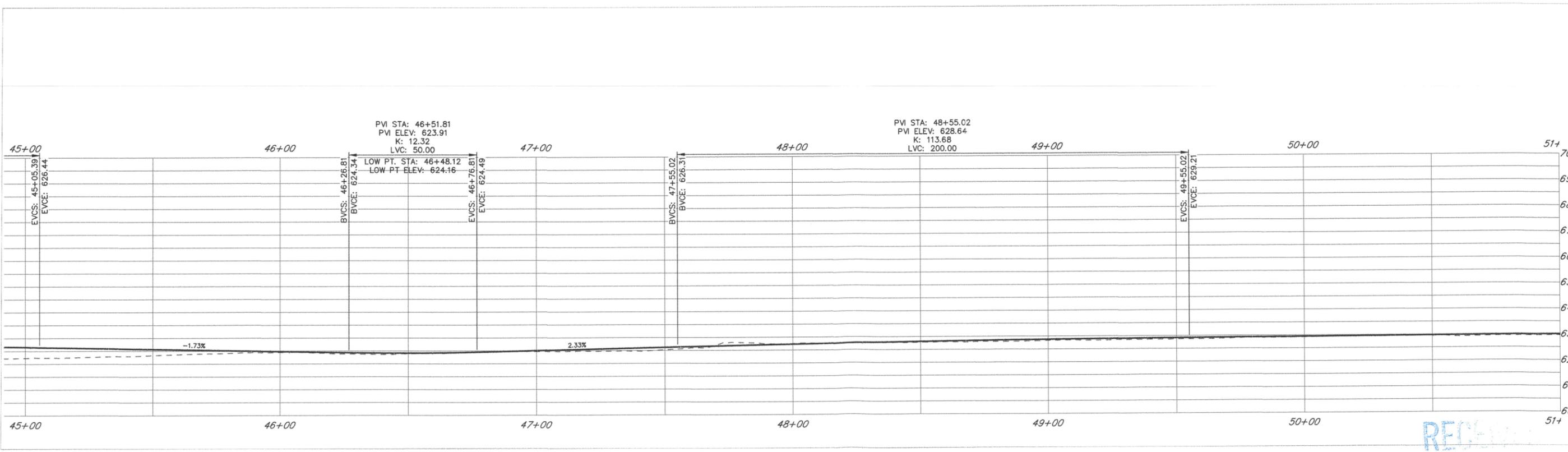
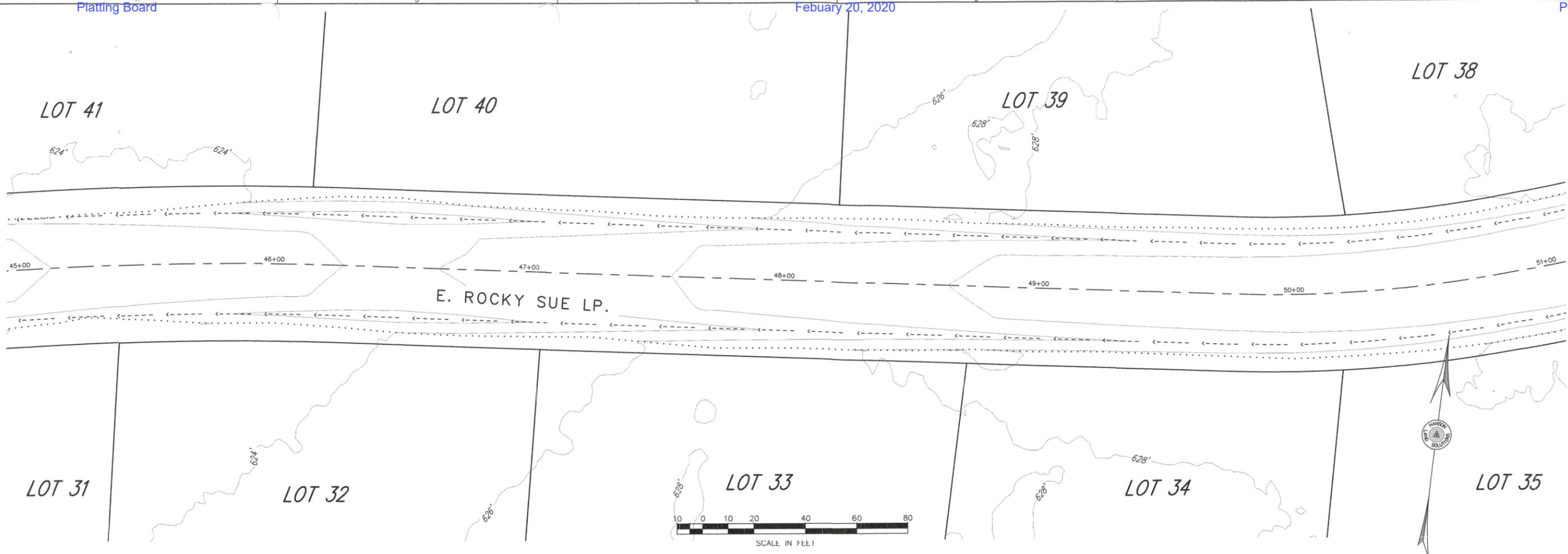
PALMER, ALASKA
 GOODWIN ESTATES
 PLAN AND PROFILE - DESIGN
 GOODWIN LOOP

DWG.#: 19-282C
 DESIGN: CEH
 DRAWN BY: SDN
 CHECKED: CEH
 SCALE
 11x17: 1" = 40'
 22x34: 1" = 20'
 REVISION DATE:
 01-17-20

REFERENCE NUMBER:
 C-3.2.8
 SHEET 9 OF 11

RECEIVED
 JAN 17 2020
 LATTING

EXHIBIT H-9



HANSON SURVEYING & MAPPING LLC
305 E. FIREWEED AVE.
PALMER, ALASKA 99645
(907)746-7738



NOTES
1. THE 2' ORIGINAL GROUND CONTOURS SHOWN HEREON ARE DERIVED FROM PUBLISHED DATA OF THE MATANUSKA, SUSITNA, BOROUGH, LIDAR/IMAGERY PROJECT OF 2011/2012.
2. DESIGN EXCAVATION/CONSTRUCTION CONTOURS ARE DISPLAYED AT 2' CONTOUR INTERVAL

PALMER, ALASKA
GOODWIN ESTATES
PLAN AND PROFILE - DESIGN
GOODWIN LOOP

DWG.#: 19-282C
DESIGN: CEH
DRAWN BY: SDN
CHECKED: CEH
SCALE
11x17: 1"=40'
22x34: 1"=20'
REVISION DATE:
01-17-20

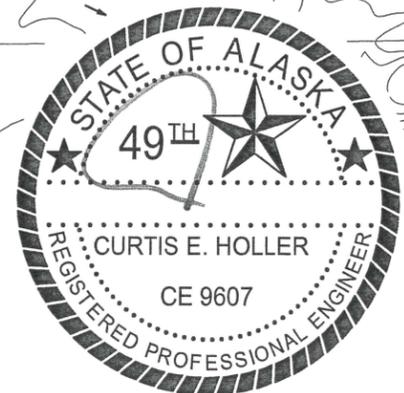
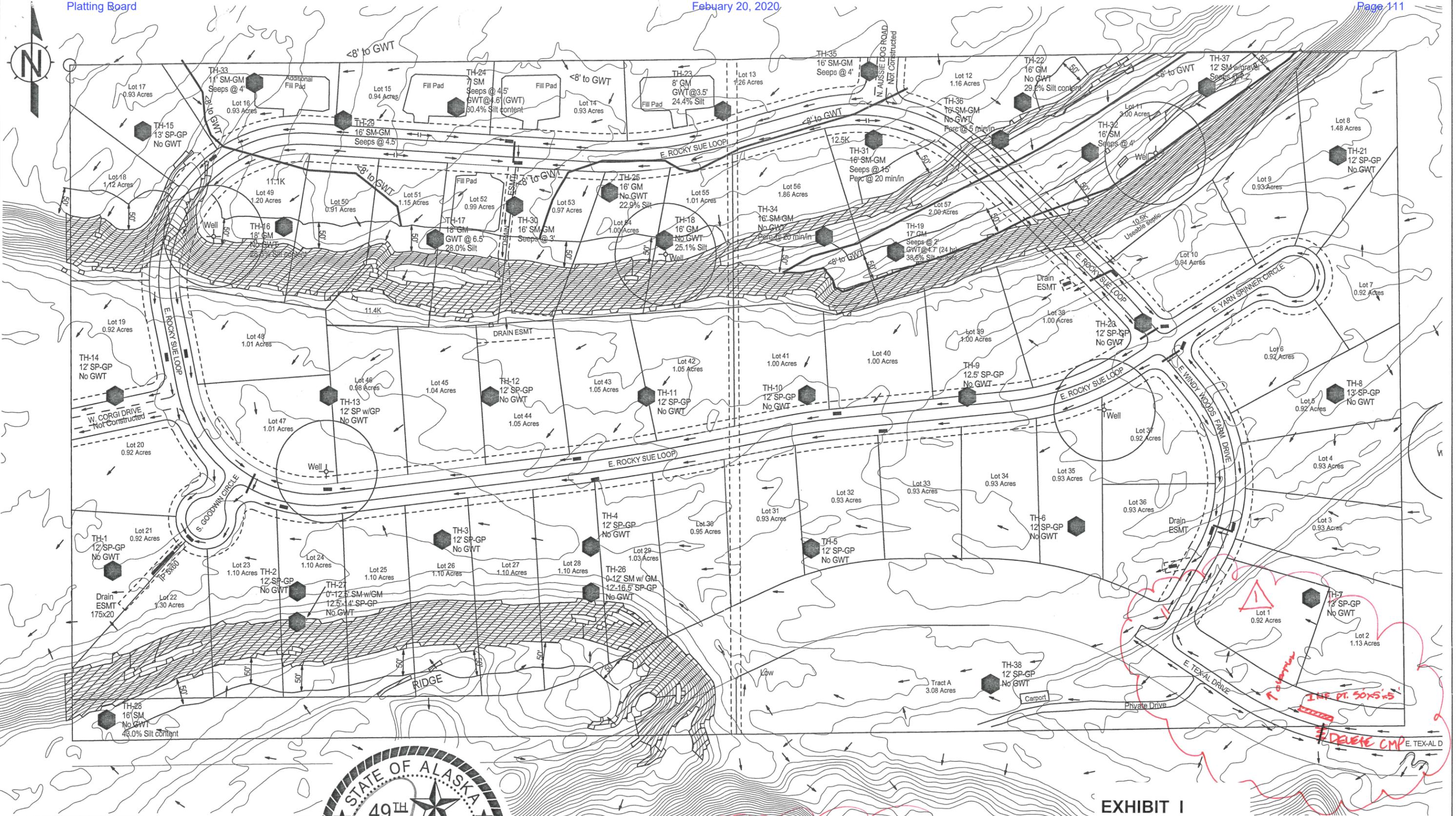
REFERENCE NUMBER:
C-3.2.9
SHEET 10 OF 11

RECEIVED

IAN 17 2020

EXHIBIT H-10

PLATTING



Goodwin Estates Subdivision
Useable Area, Drainage and Topography Map

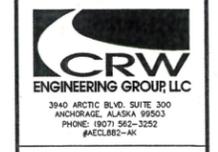
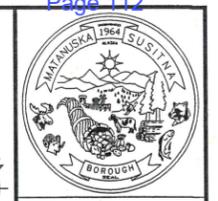
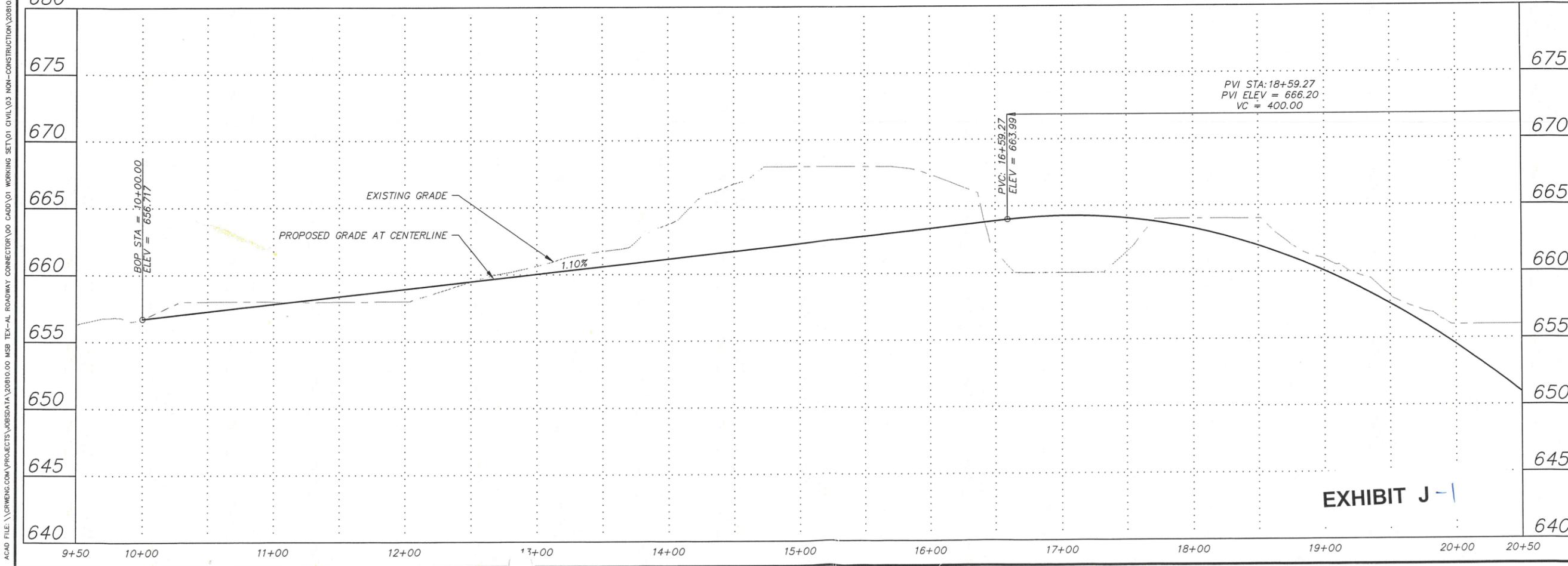
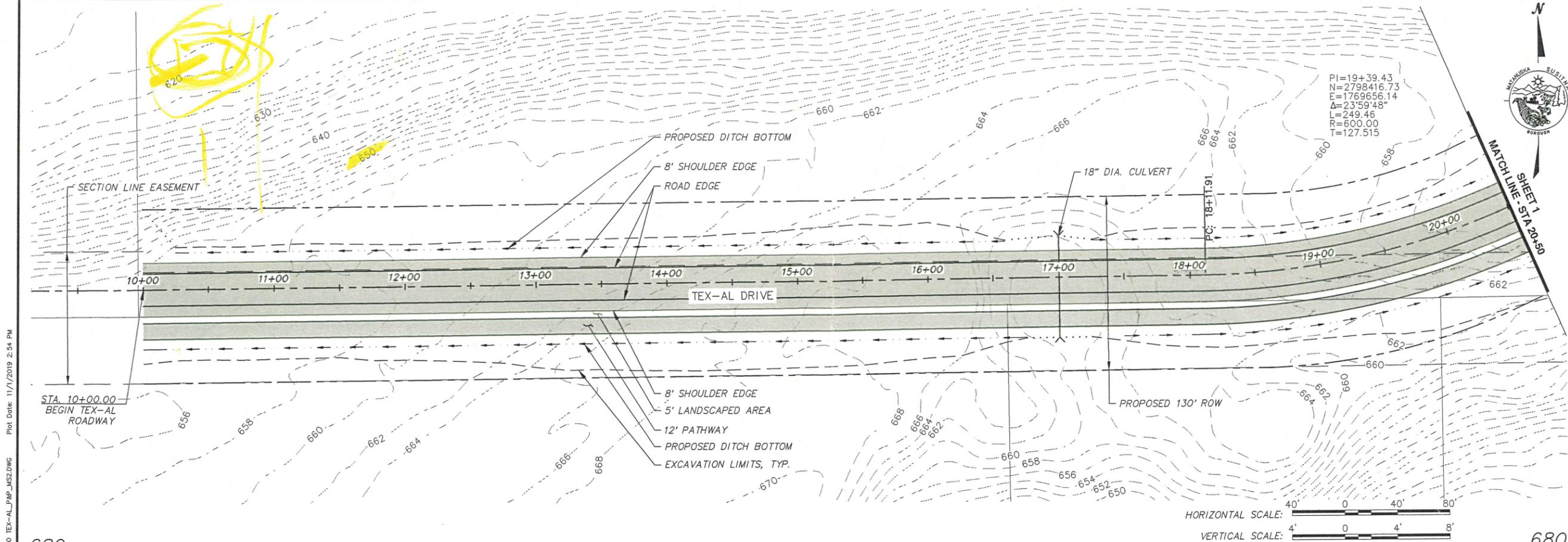
HOLLER ENGINEERING
3375 N Sams Dr. Wasilla, Alaska 99654

Job # 19106 Scale: 1" = 175' 1/17/20

*UPDATE 2-06-2020
DELETE CMP, ADD I P*

EXHIBIT I

- Notes:**
1. Base drawing provided by surveyor.
 2. MSB 2011 2' LIDAR topo not verified.
 3. Hatched areas have +25% grade.
 4. Arrows denote apparent drainage patterns.
 5. Testhole locations approximate.
 6. = 5'x15' rock infiltration trench.



65%
DRAFT

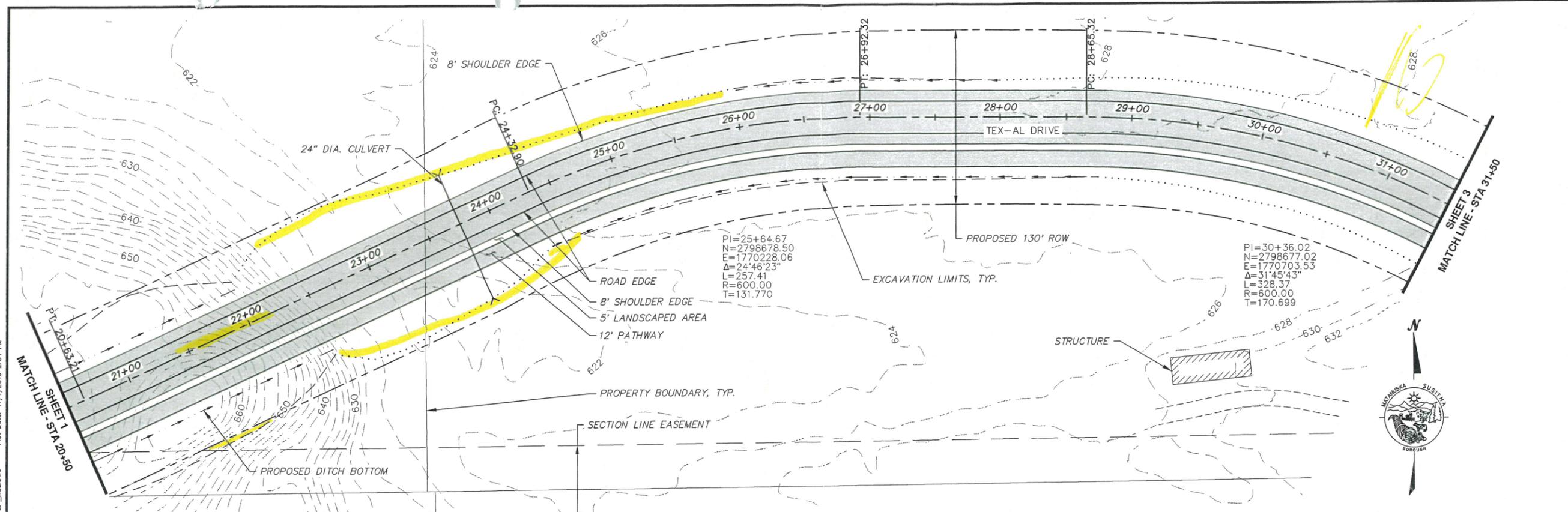
MATANUSKA-SUSITNA BOROUGH
CAPITAL PROJECTS DEPARTMENT
TEX-AL ROADWAY CONNECTION
PLAN AND PROFILE

REV	DATE	DESCRIPTION	BY	MS
	10/19	65% DRAFT		

DATE: OCT 2019
STATUS: -
SCALE:
HORZ SCALE: 1"=40'
VERT SCALE: 1"=4'

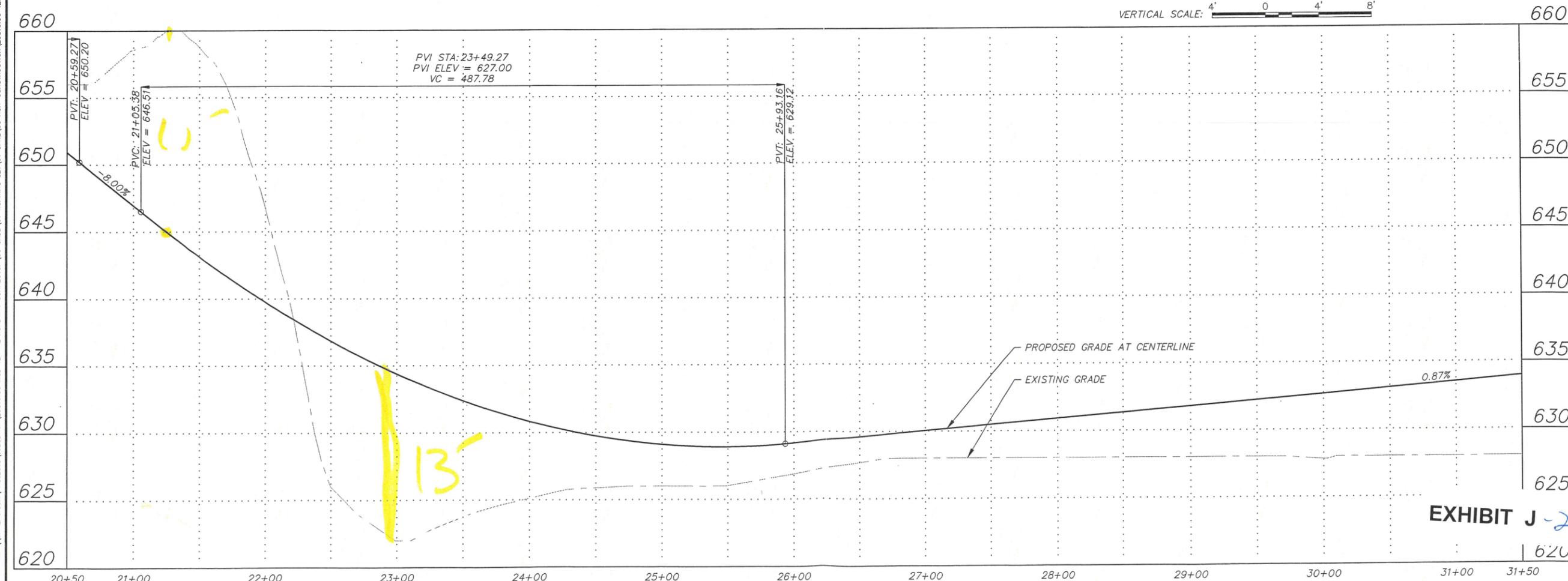
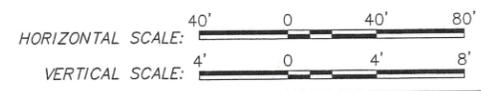
SHEET NO.
F1

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PI=25+64.67
 N=2798678.50
 E=1770228.06
 Δ=24°46'23"
 L=257.41
 R=600.00
 T=131.770

PI=30+36.02
 N=2798677.02
 E=1770703.53
 Δ=31°45'43"
 L=328.37
 R=600.00
 T=170.699



65% DRAFT

MATANUSKA-SUSITNA BOROUGH
 CAPITAL PROJECTS DEPARTMENT
 TEX-AL ROADWAY CONNECTION
 PLAN AND PROFILE

REV	DATE	DESCRIPTION
10/19	10/19	65% DRAFT

DATE: OCT 2019
 STATUS: -

EXHIBIT J-2

SCALE: 1"=40'
 SCALE: 1"=4'
 SHEET NO.

F2

ACAD FILE: \\CRWENG\PROJECTS\JOBSDATA\20810.00 MSB TEX-AL ROADWAY CONNECTOR\00 CADD\01 WORKING SET\01 CIVIL\03 NON-CONSTRUCTION\20810.00 TEX-AL_P&P_MS2.DWG Plot Date: 11/1/2019 2:54 PM

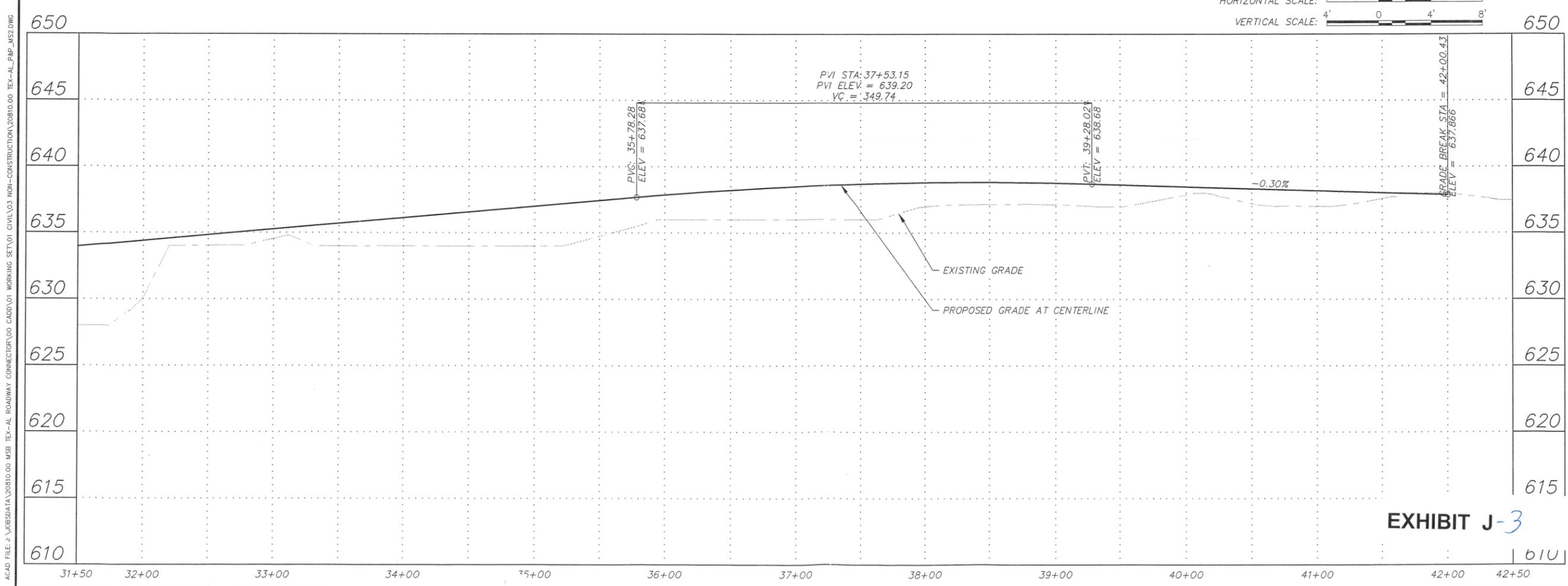
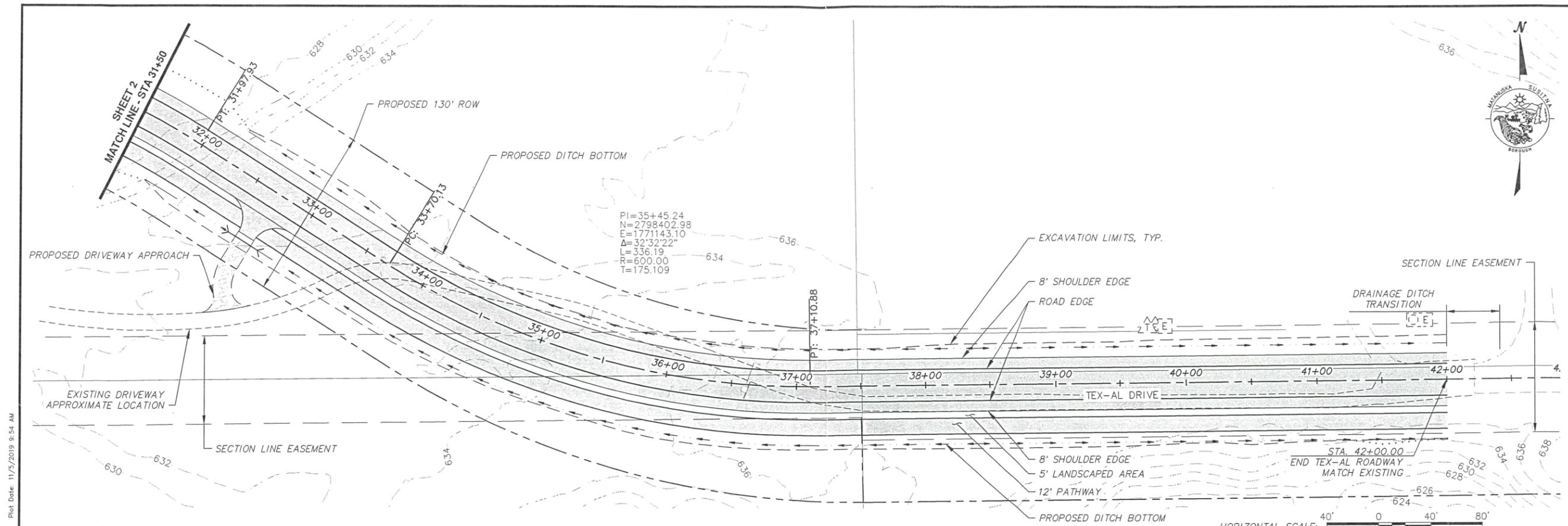
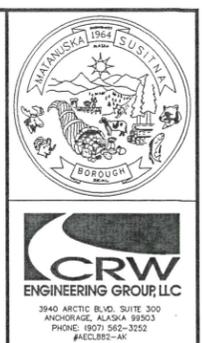


EXHIBIT J-3

61U



65% DRAFT

MATANUSKA-SUSITNA BOROUGH
CAPITAL PROJECTS DEPARTMENT
TEX-AL ROADWAY CONNECTION
PLAN AND PROFILE

REV	DATE	DESCRIPTION	BY	MS

DATE: OCT 2019
STATUS: -
SCALE:
HORZ SCALE: 1"=40'
VERT SCALE: 1"=4'
SHEET NO.
F3

ACAD FILE: \\MBSDATA\20810.00 MSB TEX-AL ROADWAY CONNECTOR\00 CADD\01 WORKING SET\01 CIVIL\03 NON-CONSTRUCTION\20810.00 TEX-AL_P&P_MS2.DWG Plot Date: 11/5/2019 9:54 AM

Peggy Horton

From: Tammy L. Simmons <Tammy.Simmons@mea.coop>
Sent: Friday, February 7, 2020 12:03 PM
To: MSB Platting
Subject: RE: Request for Comments for Goodwin Est MSP Case #2020-005 (PH)
Attachments: 20200207_115424.pdf

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

MEA comments to include a 15' utility easement along the North side of E. Tex-Al Dr. Right of Way. There is an underground line running perpendicular through the subdivision as shown on the MEA map included. MEA request this line to be located and a 20' easement centered on the existing line shown on the plat to ensure proper notification to property owners.

Thank you.

Tammy Simmons, SR/WA
Right of Way Technician
907-761-9276

From: MSB Platting <Platting@matsugov.us>
Sent: Monday, January 20, 2020 3:43 PM
To: adam.dubour@alaska.gov; regpagemaster@usace.army.mil; pamelaj.melchert@usps.gov; earl.almdale@gmail.com; retirees@mtaonline.net; cobbfam@mtaonline.net; dmeneses@palmerak.org; Jill Irsik <Jill.Irsik@matsugov.us>; Eric Phillips <Eric.Phillips@matsugov.us>; Jude Bilafer <Jude.Bilafer@matsugov.us>; Cindy Corey <Cindy.Corey@matsugov.us>; Debbie Bakic <Debbie.Bakic@matsugov.us>; Terry Dolan <Terry.Dolan@matsugov.us>; Jim Jenson <James.Jenson@matsugov.us>; Jamie Taylor <Jamie.Taylor@matsugov.us>; Charlyn Spannagel <Charlyn.Spannagel@matsugov.us>; Planning <MSB.Planning@matsugov.us>; Joseph Metzger <Joseph.Metzger@matsugov.us>; Eileen Probasco <Eileen.Probasco@matsugov.us>; Fred Wagner <Frederic.Wagner@matsugov.us>; Permit Center <Permit.Center@matsugov.us>; Alex Strawn <Alex.Strawn@matsugov.us>; Theresa Taranto <Theresa.Taranto@matsugov.us>; Andy Dean <Andy.Dean@matsugov.us>; John Aschenbrenner <John.Aschenbrenner@matsugov.us>; Jesse Sumner <jessesumnerdistrict6@gmail.com>; MEA_ROW <MEAROW@mea.coop>; Right of Way Dept. <row@mtasolutions.com>; row@enstarnaturalgas.com; ospdesign@gci.com
Subject: Request for Comments for Goodwin Est MSP Case #2020-005 (PH)

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Good Afternoon,

The link below will take you to a request for comments for a 58-lot master plan subdivision in the Fishhook area, RSA 16. Please review and provide any comments by February 7, 2020.

https://matsugovus-my.sharepoint.com/:f/g/personal/peggy_horton_matsugov_us/EhVeXC711GRPsxNwZW3JlnYBum7ydyJrw-Vw-o0JR-4EAw?e=BSKGfk

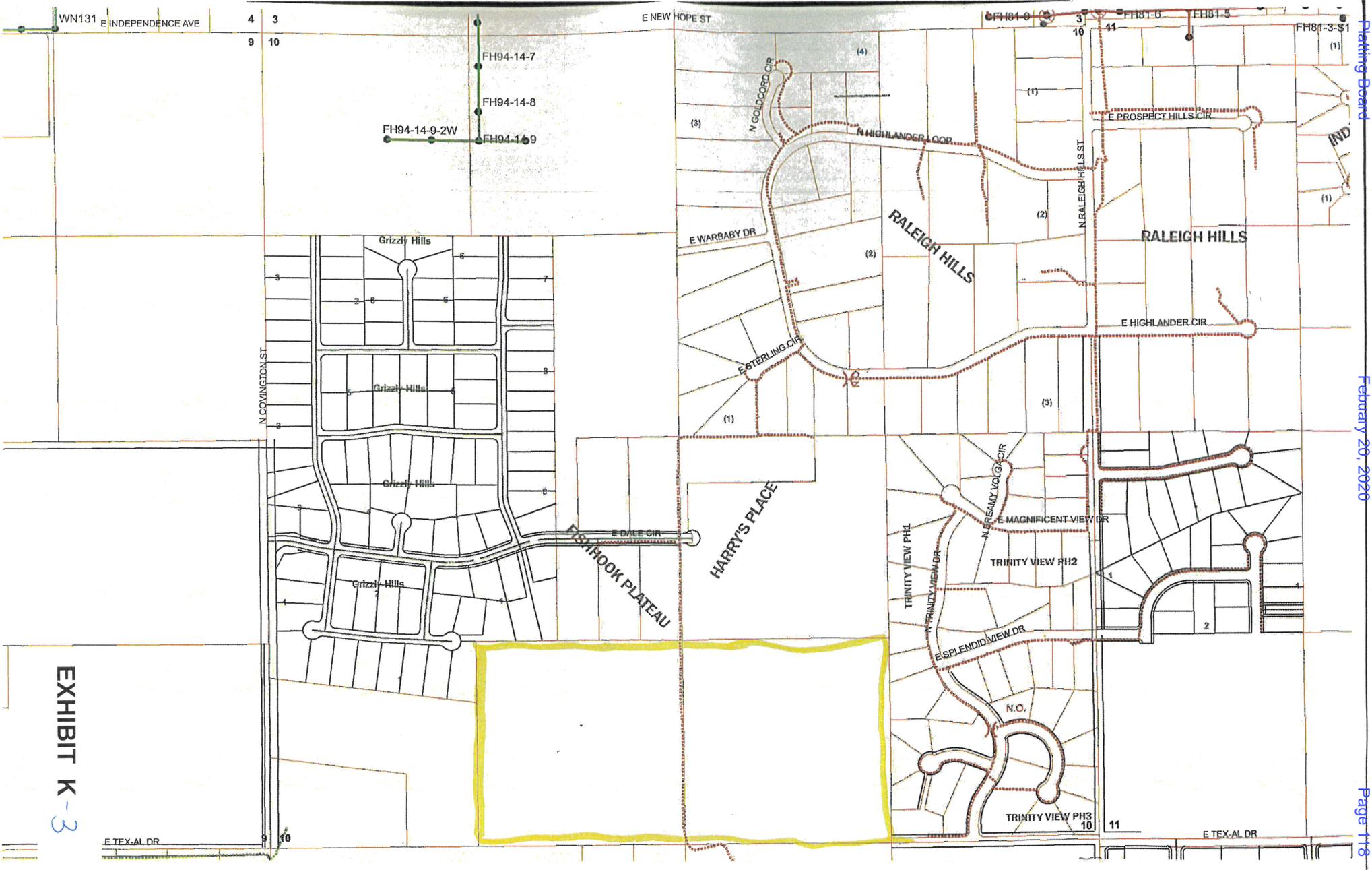


EXHIBIT K-3

A
L
A
S
K
A

2011-009348-0

Recording Dist: 311 - Palmer
5/18/2011 11:18 AM Pages: 1 of 1



MATANUSKA ELECTRIC ASSOCIATION, INC.
RIGHT OF WAY EASEMENT

KNOW ALL MEN BY THESE PRESENTS, that we the undersigned (whether one or more),

Frederick M Goodwin

whose address is POB 1265 Palmer AK 99645-1265
for a good valuable consideration, the receipt whereof is hereby acknowledged, do hereby grant unto MATANUSKA ELECTRIC ASSOCIATION, INC., a cooperative corporation (hereinafter called the "Grantee") whose post office address is Box 2929 Palmer, Alaska 99645 and to its successors or assigns, the right to enter upon the lands of the undersigned, situated in the Palmer Recording District, State of Alaska, and more particularly described as follows:

SE 1/4 SW 1/4 and SW 1/4 SE 1/4
F18 N R1E S10 Lot D2

being in Section 10, Township 18 N, Range 1E, S.M., and to construct, reconstruct, rephase, repair, operate and maintain on, over or under the above described lands and/or in, upon or under all streets, roads or highways abutting said lands, an electric (or telecommunication) transmission and/or distribution line or system; to inspect and make such repairs, changes, alterations, improvements, removals from, substitutions and additions to its facilities as the Grantee may from time to time deem advisable, including, by way of example and not by the way of limitation: the right to increase or decrease the number of conduits, wires, cables, hand holes, manholes, connection boxes, pedestals, transformer enclosures; to cut, trim and control the growth by machinery or otherwise of trees and shrubbery located within 15 feet of the center line of said line or system, or that may interfere with or threaten to endanger the operation and maintenance of said line or system (including any control of the growth of other vegetation in the right of way which may incidentally and necessarily result from the means of control employed); to keep the easement clear of all buildings, structures or other obstructions.

The undersigned agree that all poles, wires and other facilities including any main service entrance equipment, installed in, upon or under the above described lands at the Grantee's expense shall remain the property of the Grantee, removable at the option of the Grantee.

The Grantee, its successors or assigns, is hereby expressly given and granted the right to assign said right-of-way and easement herein granted and conveyed, or any part thereof, or interest therein.

TO HAVE AND TO HOLD unto the GRANTEE, its successors or assigns, together with the right of ingress to and egress from the premises for the purpose herein granted.

The undersigned covenant that they are the owners of the above described lands, and that the said lands are free and clear of encumbrances and liens of whatsoever character except as may appear of record as of the date set forth below, and those held by the following persons: _____

IN WITNESS WHEREOF, the undersigned have set their hands and seals this 26th day of August, 20 10.

Frederick M Goodwin Grantor _____ Grantor

STATE OF ALASKA)SS-

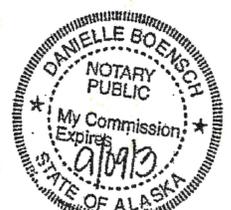
THIS IS TO CERTIFY that on this 26th day of August, 20 10 before me, the undersigned, a Notary Public in and for the State of Alaska, duly commissioned and sworn as such, personally appeared

Frederick M Goodwin

Known to me and to me known to be the individual(s) named in and who executed the foregoing instrument and acknowledged to me that he/she/they signed and sealed the same as a voluntary act and deed for the uses and purposes therein mentioned.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year first above written

[Signature]
Notary Public in and of Alaska My commission expires 9/19/13 SEAL



W/O 100272 Subd 7000165 Plat _____
P/S _____ Misc _____ Map 18K2 Quad _____
Pole _____ Easement 20110273

Return to: MEA, PO Box 2929, Palmer, AK 99645 Rev.2006

EXHIBIT K-4

CC

A
L
A
S
K
A

2011-016813-0

Recording Dist: 311 - Palmer
8/31/2011 2:35 PM Pages: 1 of 1



MATANUSKA ELECTRIC ASSOCIATION, INC.
RIGHT OF WAY EASEMENT

KNOW ALL MEN BY THESE PRESENTS, that we the undersigned (whether one or more),

Mary Susanne Goodwin

whose address is PO Box 1265 Palmer AK 99645

for a good valuable consideration, the receipt whereof is hereby acknowledged, do hereby grant unto MATANUSKA ELECTRIC ASSOCIATION, INC., a cooperative corporation (hereinafter called the "Grantee") whose post office address is Box 2929 Palmer, Alaska 99645, and to its successors or assigns, the right to enter upon the lands of the undersigned, situated in the Palmer Recording District, State of Alaska, and more particularly described as follows:

**SE1/4 SW1/4 and SW1/4 SE1/4 Section 10, T18N, R1E, S.M.,
and NW1/4 NE1/4 Section 15, T18N, R1E, S.M.**

being in Section _____, Township _____ N, Range _____, S.M., and to construct, reconstruct, rephase, repair, operate and maintain on, over or under the above described lands and/or in, upon or under all streets, roads or highways abutting said lands, an electric (or telecommunication) transmission and/or distribution line or system; to inspect and make such repairs, changes, alterations, improvements, removals from, substitutions and additions to its facilities as the Grantee may from time to time deem advisable, including, by way of example and not by the way of limitation: the right to increase or decrease the number of conduits, wires, cables, hand holes, manholes, connection boxes, pedestals, transformer enclosures; to cut, trim and control the growth by machinery or otherwise of trees and shrubbery located within 15 feet of the center line of said line or system, or that may interfere with or threaten to endanger the operation and maintenance of said line or system (including any control of the growth of other vegetation in the right of way which may incidentally and necessarily result from the means of control employed); to keep the easement clear of all buildings, structures or other obstructions.

The undersigned agree that all poles, wires and other facilities including any main service entrance equipment, installed in, upon or under the above described lands at the Grantee's expense shall remain the property of the Grantee, removable at the option of the Grantee.

The Grantee, its successors or assigns, is hereby expressly given and granted the right to assign said right-of-way and easement herein granted and conveyed, or any part thereof, or interest therein.

TO HAVE AND TO HOLD unto the GRANTEE, its successors or assigns, together with the right of ingress to and egress from the premises for the purpose herein granted.

The undersigned covenant that they are the owners of the above described lands, and that the said lands are free and clear of encumbrances and liens of whatsoever character except as may appear of record as of the date set forth below, and those held by the following persons: _____

IN WITNESS WHEREOF, the undersigned have set their hands and seals this 31 day of Aug, 2011.

Mary Susanne Goodwin Grantor _____ Grantor
Mary Susanne Goodwin

STATE OF ALASKA)SS-

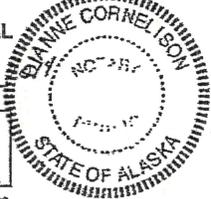
THIS IS TO CERTIFY that on this 31 day of Aug, 2011 before me, the undersigned, a Notary Public in and for the State of Alaska, duly commissioned and sworn as such, personally appeared

Mary Susanne Goodwin

Known to me and to me known to be the individual(s) named in and who executed the foregoing instrument and acknowledged to me that he/she/they signed and sealed the same as a voluntary act and deed for the uses and purposes therein mentioned.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year first above written

Dianne Cornelison
Notary Public in and of Alaska My commission expires April 5,



W/O 100272 Subd 7000165 Plat _____
P/S _____ Misc _____ Map _____ Quad _____
Pole _____ Easement 20116781

Return to: MEA, PO Box 2929, Palmer, AK 99645 20116782 Rev.200

EXHIBIT K-5

Peggy Horton

From: Holly Sparrow <hsparrow@mtasolutions.com>
Sent: Friday, February 7, 2020 7:42 AM
To: MSB Platting
Subject: RE: Request for Comments for Goodwin Est MSP Case #2020-005 (PH)

[EXTERNAL EMAIL - CAUTION: Do not open unexpected attachments or links.]

Good morning,

MTA has reviewed the plat for Goodwin Estates. MTA has no comments.

Thank you for the opportunity to comment.

Holly Sparrow, Right of Way Agent

MTA | 1740 S. Chugach Street | Palmer, Alaska 99645
office: 907-761-2599 | www.mtasolutions.com



Life. Technology. Together.

From: MSB Platting <Platting@matsugov.us>
Sent: Monday, January 20, 2020 3:43 PM
To: adam.dubour@alaska.gov; regpagemaster@usace.army.mil; pamelaj.melchert@usps.gov; earl.almdale@gmail.com; retirees@mtaonline.net; cobbfam@mtaonline.net; dmeneses@palmerak.org; Jill Irsik <Jill.Irsik@matsugov.us>; Eric Phillips <Eric.Phillips@matsugov.us>; Jude Bilafer <Jude.Bilafer@matsugov.us>; Cindy Corey <Cindy.Corey@matsugov.us>; Debbie Bakic <Debbie.Bakic@matsugov.us>; Terry Dolan <Terry.Dolan@matsugov.us>; Jim Jenson <James.Jenson@matsugov.us>; Jamie Taylor <Jamie.Taylor@matsugov.us>; Charlyn Spannagel <Charlyn.Spannagel@matsugov.us>; Planning <MSB.Planning@matsugov.us>; Joseph Metzger <Joseph.Metzger@matsugov.us>; Eileen Probasco <Eileen.Probasco@matsugov.us>; Fred Wagner <Frederic.Wagner@matsugov.us>; Permit Center <Permit.Center@matsugov.us>; Alex Strawn <Alex.Strawn@matsugov.us>; Theresa Taranto <Theresa.Taranto@matsugov.us>; Andy Dean <Andy.Dean@matsugov.us>; John Aschenbrenner <John.Aschenbrenner@matsugov.us>; Jesse Sumner <jessesumnerdistrict6@gmail.com>; mearow@matanuska.com; Right of Way Dept. <row@mtasolutions.com>; row@enstarnaturalgas.com; ospdesign@gci.com
Subject: Request for Comments for Goodwin Est MSP Case #2020-005 (PH)

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Good Afternoon,

EXHIBIT L

Peggy Horton

From: Jamie Taylor
Sent: Friday, February 7, 2020 3:18 PM
To: MSB Platting
Cc: Peggy Horton
Subject: RE: Request for Comments for Goodwin Est MSP Case #2020-005 (PH)

- I approve the less than 350' radii horizontal curves due to the site constraints as stated in the surveyor's letter.
- Plan & profile – A05.5 f) requires maximum grade of 7% within 50 feet of an intersection on the through road – check this at the intersection of the two stub roads with the loop road.

Jamie Taylor, PE
Civil Engineer
Matanuska-Susitna Borough
Department of Public Works
Operations & Maintenance
t: 907-861-7765 c: 907-355-9810
jamie.taylor@matsugov.us
<http://www.matsugov.us/>

From: MSB Platting <Platting@matsugov.us>
Sent: Monday, January 20, 2020 3:43 PM
To: adam.dubour@alaska.gov; regpagemaster@usace.army.mil; pamelaj.melchert@usps.gov; earl.almdale@gmail.com; retirees@mtaonline.net; cobbfam@mtaonline.net; dmeneses@palmerak.org; Jill Irsik <Jill.Irsik@matsugov.us>; Eric Phillips <Eric.Phillips@matsugov.us>; Jude Bilafer <Jude.Bilafer@matsugov.us>; Cindy Corey <Cindy.Corey@matsugov.us>; Debbie Bakic <Debbie.Bakic@matsugov.us>; Terry Dolan <Terry.Dolan@matsugov.us>; Jim Jenson <James.Jenson@matsugov.us>; Jamie Taylor <Jamie.Taylor@matsugov.us>; Charlyn Spannagel <Charlyn.Spannagel@matsugov.us>; Planning <MSB.Planning@matsugov.us>; Joseph Metzger <Joseph.Metzger@matsugov.us>; Eileen Probasco <Eileen.Probasco@matsugov.us>; Fred Wagner <Frederic.Wagner@matsugov.us>; Permit Center <Permit.Center@matsugov.us>; Alex Strawn <Alex.Strawn@matsugov.us>; Theresa Taranto <Theresa.Taranto@matsugov.us>; Andy Dean <Andy.Dean@matsugov.us>; John Aschenbrenner <John.Aschenbrenner@matsugov.us>; Jesse Sumner <jessesumnerdistrict6@gmail.com>; mearow@matanuska.com; Right of Way Dept. <row@mtasolutions.com>; row@enstarnaturalgas.com; ospdesign@gci.com
Subject: Request for Comments for Goodwin Est MSP Case #2020-005 (PH)

Good Afternoon,
The link below will take you to a request for comments for a 58-lot master plan subdivision in the Fishhook area, RSA 16. Please review and provide any comments by February 7, 2020.

https://matsugovus-my.sharepoint.com/:f/g/personal/peggy_horton_matsugov_us/EhVeXC711GRPsxNwZW3JlnYBum7ydyJrw-Vw-o0JR-4EAw?e=BSKGfk

NOTE: Please open the link in Chrome or copy and paste the link to your browser. Using Microsoft Edge seems to cause some viewing problems.

EXHIBIT M

PLANNING & LAND USE DIRECTOR'S CERTIFICATE

I CERTIFY THAT THIS SUBDIVISION PLAT HAS BEEN FOUND TO COMPLY WITH THE LAND SUBDIVISION REGULATIONS OF THE MATANUSKA-SUSITNA BOROUGH, AND THAT THE PLAT HAS BEEN APPROVED BY THE PLATTING AUTHORITY BY PLAT RESOLUTION NUMBER _____ DATED _____, 20____, AND THAT THIS PLAT HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE RECORDER IN THE PALMER RECORDING DISTRICT, THIRD JUDICIAL DISTRICT, STATE OF ALASKA, IN WHICH THE PLAT IS LOCATED

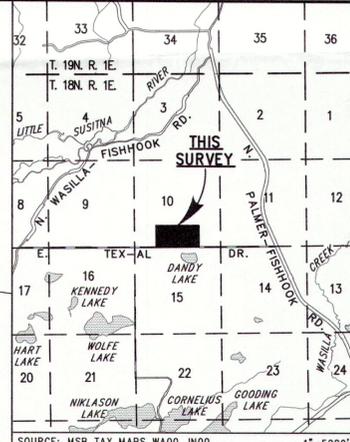
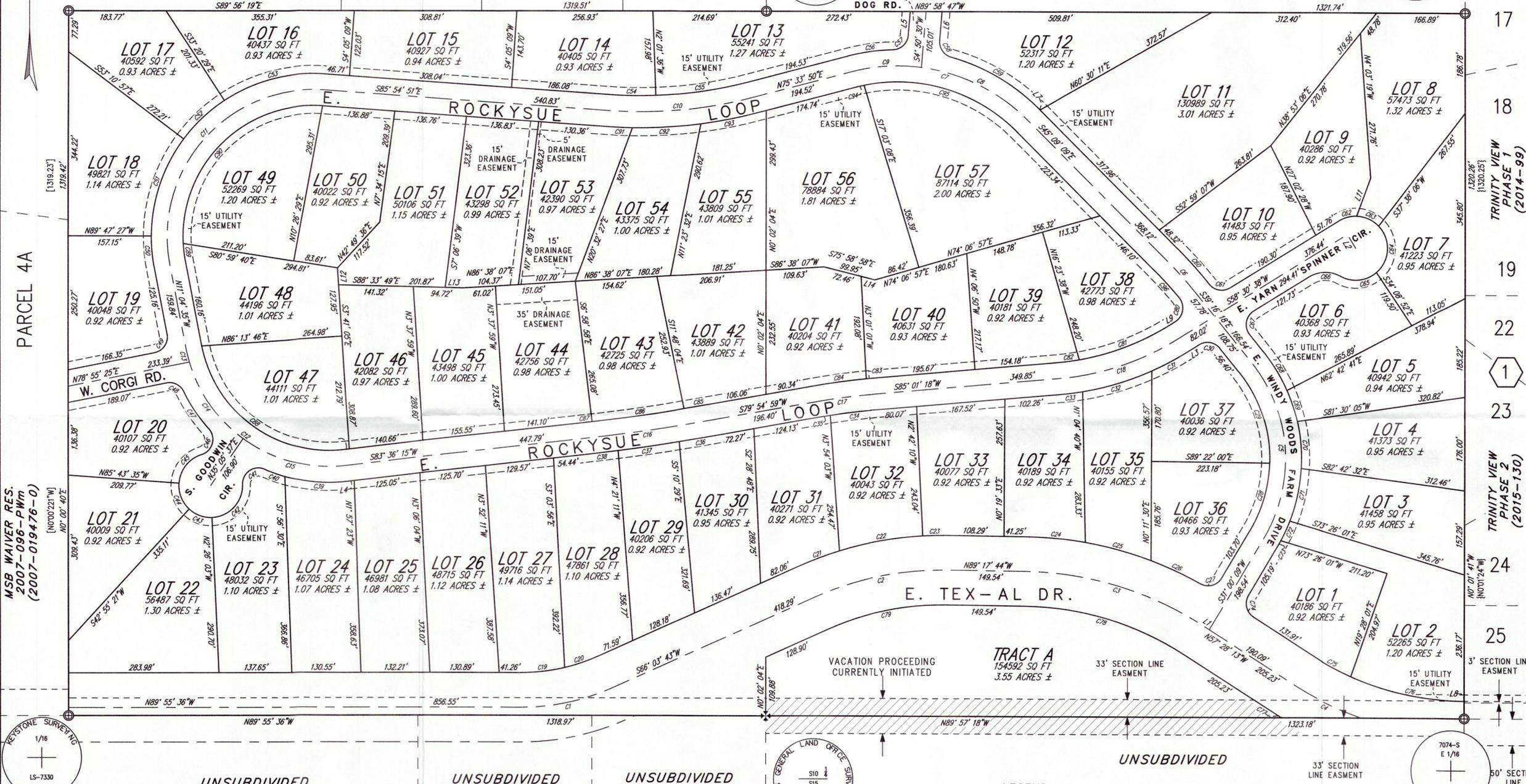
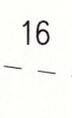
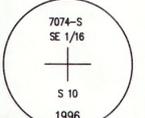
PLANNING AND LAND USE DIRECTOR _____ DATE _____

ATTEST: _____ (PLATTING CLERK)

CERTIFICATE OF PAYMENT OF TAXES

I HEREBY CERTIFY THAT ALL CURRENT TAXES AND SPECIAL ASSESSMENTS, THROUGH _____, 20____, AGAINST THE PROPERTY, INCLUDED IN THE SUBDIVISION OR RESUBDIVISION, HEREON HAVE BEEN PAID.

TAX COLLECTION OFFICIAL _____ DATE _____
(MATANUSKA-SUSITNA BOROUGH)



CERTIFICATE OF OWNERSHIP AND DEDICATION

I HEREBY CERTIFY THAT I AM THE OWNER OF THE PROPERTY SHOWN AND DESCRIBED ON THIS PLAN AND THAT I ADOPT THIS PLAN OF SUBDIVISION BY MY FREE CONSENT, DEDICATE ALL RIGHTS-OF-WAY TO THE MAT-SU BOROUGH, AND GRANT ALL EASEMENTS TO THE USES SHOWN.

MARY SUSANNE GOODWIN _____ DATE _____
8202 E. TEX-AL DR.
PALMER AK 99645-8377

NOTARY ACKNOWLEDGEMENT

SUBSCRIBED AND SWORN BEFORE ME THIS _____ DAY OF _____, 201____.

FOR _____

NOTARY FOR THE STATE OF ALASKA
MY COMMISSION EXPIRES: _____



I HEREBY CERTIFY THAT I AM A REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF ALASKA, AND THAT THIS PLAT REPRESENTS A SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION, AND THAT THE MONUMENTS SHOWN ON THE PLAT ACTUALLY EXIST AS DESCRIBED AND THAT ALL DIMENSIONAL AND OTHER DETAILS ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

REGISTERED LAND SURVEYOR

A MASTER PLAN OF
GOODWIN ESTATES

A SUBDIVISION OF
**PARCELS 1 AND 2,
FORTY ACRE EXEMPTION 2011-82-EXM
(2011-021123-0)**

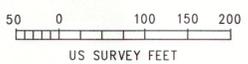
RECORDED IN PALMER RECORDING DISTRICT
STATE OF ALASKA
JAN 17 2020
PLATTING

LOCATED WITHIN
S 1/2 SEC. 10, T.18N. R.1E. SM, AK
CONTAINING 80.04 ACRES MORE OR LESS

**HANSON
LAND SOLUTIONS**
305 EAST FIREWEED AVENUE
PALMER, ALASKA, 99645
(907)746-7738

FILE: FB19-282 CK: CEH SCALE: 1"=100' 01/17/20 01 OF 2

- #### NOTES
- ALL DISTANCES SHOWN ARE GROUND DISTANCES.
 - THE BASIS OF BEARING ON THIS PLAT IS TRUE NORTH WITH RESPECT TO THE LONGITUDINAL MERIDIAN THROUGH THE SOUTH 1/4 CORNER OF SECTION 10, A G.L.O. BRASS CAP MONUMENT (SURVEYED POINT 703) WITH A NETWORK GNSS GEODETIC POSITION OF 61°39'25.94"N 149°15'15.41"W
 - NO INDIVIDUAL WATER SUPPLY SYSTEM OR SEWAGE DISPOSAL SYSTEM SHALL BE PERMITTED ON ANY LOT UNLESS THE SYSTEM IS LOCATED, CONSTRUCTED, AND EQUIPPED IN ACCORDANCE WITH THE REQUIREMENTS, STANDARDS, AND RECOMMENDATIONS OF THE STATE OF ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION, WHICH GOVERNS THOSE SYSTEMS.
 - THERE MAY BE FEDERAL, STATE, AND LOCAL REQUIREMENTS GOVERNING LAND USE. THE INDIVIDUAL PARCEL OWNER SHALL OBTAIN A DETERMINATION WHETHER THESE REQUIREMENTS APPLY TO THE DEVELOPMENT OF PARCELS SHOWN ON THE PLAT TO BE RECORDED.
 - THIS SUBDIVISION IS SUBJECT TO M.E.A. BLANKET EASEMENTS RECORDED ON MAY 18, 2011 IN DOCUMENT #2011-009348-0 AND ON AUGUST 31, 2011 IN DOCUMENT #2011-016813-0, PALMER RECORDING DISTRICT.
 - BLOCK DELINEATION FOR THIS SUBDIVISION IS IN PART DICTATED BY A NATURAL PHYSICAL BARRIER RUNNING THE LENGTH OF THE SITE. THIS BARRIER FORMS A NATURAL DISTINCTION BETWEEN THE UPPER AND LOWER REGIONS OF THE SUBDIVISION AND THE BLOCK NUMBERS REFLECT THIS.



LEGEND

- ⊕ RECOVERED 2 1/2" GLO BRASS CAP MONUMENT
- ⊕ RECOVERED 3/4" ALUMINUM MONUMENT
- ⊕ RECOVERED 2 1/2" ALUMINUM MONUMENT
- ⊕ SET PLASTIC CAP ON 3/8" REBAR
- MEASURED DATA
- (N89°59'44"E) (1321.53') RECORD PER PLAT (2006-209)
- [S89°57'13"E] [1319.46'] RECORD PER PLAT (2012-24)
- {N00°12'4"W} {1320.25'} RECORD PER PLAT (2014-99)
- <N00°12'4"W> <1320.25> RECORD PER RECORD OF SURVEY (96-67)
- 703 SURVEY POINT NUMBER
- ① BLOCK

CURVE TABLE						
CURVE #	LENGTH	RADIUS	DELTA	CHORD LENGTH	CHORD BEARING	TANGENT
C1	176.77	421.80	24°00'41"	175.47	S78° 04' 04"W	89.70
C2	258.34	600.65	24°38'33"	256.35	S78° 23' 00"W	131.20
C3	353.94	637.21	31°49'31"	349.41	N73° 22' 58"W	181.66
C4	143.34	600.00	13°41'18"	143.00	N64° 18' 52"W	72.02
C5	355.69	290.00	70°16'26"	333.81	S4° 08' 04"E	204.10
C6	82.11	800.00	5°52'51"	82.08	S42° 12' 43"E	41.09
C7	362.14	350.00	59°17'01"	346.20	S74° 47' 39"E	199.17
C8	229.04	350.00	37°29'41"	224.98	N63° 53' 59"W	118.79
C9	133.10	350.00	21°47'20"	132.30	S86° 27' 30"W	67.36
C10	273.93	847.38	18°31'19"	272.74	N84° 49' 30"E	138.17
C11	504.74	275.00	105°09'45"	436.82	N41° 30' 17"E	359.44
C12	409.50	275.00	85°19'10"	372.70	N53° 44' 10"W	253.40
C13	25.36	275.00	5°16'59"	25.35	S13° 43' 05"E	12.69
C14	179.64	275.00	37°25'38"	176.46	S35° 04' 23"E	93.15
C15	204.51	275.00	42°36'33"	199.83	S75° 05' 28"E	107.24
C16	254.16	3948.79	3°41'16"	254.12	S81° 45' 37"W	127.13
C17	110.33	1238.15	5°06'20"	110.29	S82° 28' 08"W	55.20
C18	240.98	520.79	26°30'40"	238.83	S71° 45' 58"W	122.68
C19	83.06	356.80	13°20'17"	82.87	N83° 24' 16"E	41.72
C20	66.47	356.80	10°40'24"	66.37	N71° 23' 55"E	33.33
C21	79.21	665.65	6°49'03"	79.16	N69° 28' 15"E	39.65
C22	161.38	665.65	13°53'28"	160.99	N79° 49' 31"E	81.09
C23	45.70	665.65	3°56'02"	45.69	N88° 44' 16"E	22.86
C24	113.07	704.88	9°11'28"	112.95	S84° 40' 56"E	56.66
C25	128.92	700.36	10°32'49"	128.74	S74° 48' 35"E	64.64
C26	102.59	702.21	8°22'15"	102.50	S65° 21' 53"E	51.39
C27	45.98	30.00	87°49'06"	41.61	N74° 54' 42"E	28.88
C28	133.06	260.00	29°19'24"	131.62	N16° 20' 27"E	68.02
C29	185.83	260.00	40°57'03"	181.90	N18° 47' 46"W	97.08
C30	43.05	30.00	82°13'04"	39.45	N80° 22' 50"W	26.18
C31	72.46	550.79	7°32'17"	72.41	S62° 16' 46"W	36.28
C32	136.97	550.79	14°14'52"	136.61	S73° 10' 20"W	68.84
C33	45.43	550.79	4°43'32"	45.41	S82° 39' 32"W	22.73
C34	85.20	1208.15	4°02'26"	85.18	S83° 00' 05"W	42.62
C35	22.46	1208.15	1°03'54"	22.46	S80° 26' 56"W	11.23
C36	71.05	3978.79	1°01'23"	71.05	S80° 25' 40"W	35.52
C37	116.42	3978.79	1°40'35"	116.41	S81° 46' 39"W	58.21
C38	68.63	3978.79	0°59'18"	68.63	S83° 06' 36"W	34.32
C39	118.95	305.00	22°20'46"	118.20	N85° 13' 22"W	60.24
C40	40.44	304.03	7°37'13"	40.41	N70° 15' 06"W	20.25
C41	60.55	30.00	115°38'59"	50.79	S55° 59' 31"W	47.68
C42	93.03	60.00	88°50'29"	83.99	S43° 08' 43"W	58.80
C43	47.50	60.00	45°21'23"	46.27	N69° 45' 21"W	25.07
C44	53.77	60.00	51°21'04"	51.99	N21° 24' 07"W	28.84
C45	72.12	60.00	68°52'21"	67.86	S38° 42' 35"W	41.14
C46	60.40	30.00	115°20'50"	50.70	S15° 49' 02"W	47.41
C47	84.79	304.88	15°56'07"	84.52	S33° 47' 51"E	42.67
C48	39.48	30.04	75°18'05"	36.70	S63° 31' 35"E	23.18

CURVE TABLE						
CURVE #	LENGTH	RADIUS	DELTA	CHORD LENGTH	CHORD BEARING	TANGENT
C49	47.12	30.00	90°00'00"	42.43	N33° 55' 25"E	30.00
C50	60.08	305.00	11°17'08"	59.98	N5° 26' 01"W	30.14
C51	194.88	305.00	36°36'30"	191.58	S18° 30' 48"W	100.89
C52	105.62	305.00	19°50'27"	105.09	S46° 44' 17"W	53.34
C53	199.24	305.00	37°25'39"	195.71	S75° 22' 20"W	103.32
C54	87.20	817.38	6°06'45"	87.16	S88° 58' 13"E	43.64
C55	177.03	817.38	12°24'34"	176.69	S81° 46' 07"W	88.86
C56	86.37	380.00	13°01'23"	86.19	S82° 04' 32"W	43.37
C57	43.85	30.00	83°44'43"	40.05	S46° 42' 52"W	26.89
C58	41.58	30.00	79°24'43"	38.33	S34° 51' 51"E	24.91
C59	195.11	380.00	29°25'05"	192.97	S59° 51' 41"E	99.75
C60	85.19	830.00	5°52'51"	85.15	S42° 12' 43"E	42.63
C61	43.05	30.00	82°13'04"	39.45	S80° 22' 50"E	26.18
C62	34.73	60.00	33°10'02"	34.25	S75° 05' 39"W	17.87
C63	46.64	60.00	44°32'16"	45.47	N66° 03' 12"W	24.57
C64	97.24	60.00	92°51'19"	86.94	S2° 38' 35"W	63.07
C65	72.72	60.00	69°26'23"	68.35	S83° 47' 26"W	41.58
C66	62.83	60.00	60°00'00"	60.00	S88° 30' 38"W	34.64
C67	51.20	30.00	97°46'56"	45.21	S9° 37' 10"W	34.38
C68	85.65	320.00	15°20'09"	85.40	S31° 36' 13"E	43.08
C69	62.16	320.00	11°07'47"	62.06	N18° 22' 16"W	31.18
C70	89.54	320.00	16°01'55"	89.25	S4° 47' 24"E	45.06
C71	101.08	320.00	18°05'51"	100.66	N12° 16' 28"E	50.96
C72	40.46	319.99	7°14'40"	40.43	N24° 56' 43"E	20.26
C73	13.60	320.00	2°26'06"	13.60	S29° 47' 06"W	6.80
C74	46.28	30.00	88°23'39"	41.83	S13° 11' 41"E	29.17
C75	84.41	534.98	9°02'25"	84.32	S61° 54' 43"E	42.29
C76	219.65	535.35	23°30'27"	218.11	N78° 11' 36"W	111.39
C77	13.34	671.42	1°08'18"	13.34	S58° 02' 34"E	6.67
C78	317.83	572.21	31°49'31"	313.76	S73° 22' 58"E	163.13
C79	230.38	535.65	24°38'33"	228.61	N78° 23' 00"E	117.00
C80	51.64	30.00	98°37'58"	45.50	S9° 11' 39"W	34.90
C81	182.72	490.79	21°19'50"	181.66	S69° 10' 33"W	92.43
C82	44.38	490.79	5°10'51"	44.36	N82° 25' 53"E	22.20
C83	10.98	1268.15	0°29'47"	10.98	N84° 46' 25"E	5.49
C84	102.02	1268.15	4°36'33"	101.99	N82° 13' 15"E	51.04
C85	51.00	3918.79	0°44'44"	51.00	N80° 17' 21"E	25.50
C86	175.60	3918.79	2°34'03"	175.59	N81° 56' 44"E	87.82
C87	25.63	3918.79	0°22'29"	25.63	N83° 25' 00"E	12.82
C88	364.50	245.02	85°14'14"	331.81	N53° 46' 25"W	225.45
C89	34.37	245.00	8°02'18"	34.34	N7° 03' 26"W	17.21
C90	415.31	245.00	97°07'27"	367.34	S45° 31' 26"W	277.53
C91	47.35	860.88	3°09'04"	47.34	N87° 28' 29"W	23.68
C92	129.73	874.20	8°30'10"	129.61	N86° 45' 48"E	64.99
C93	106.55	877.38	6°57'29"	106.48	N79° 02' 35"E	53.34
C94	16.04	320.54	2°52'03"	16.04	N76° 59' 52"E	8.02
C95	313.75	319.89	56°11'48"	301.33	S73° 28' 34"E	170.79
C96	67.60	770.00	5°01'48"	67.58	S42° 38' 14"E	33.82

LINE TABLE		
LINE #	LENGTH	BEARING
L1	15.14	S58° 26' 59"E
L2	30.00	N31° 29' 22"W
L3	29.67	S58° 30' 38"W
L4	13.03	S83° 36' 15"W
L5	44.58	S4° 50' 30"W
L6	54.18	S4° 50' 30"W
L7	1.84	S45° 09' 09"E
L8	0.92	N89° 57' 18"W
L9	13.19	S58° 30' 38"W
L11	76.00	N20° 26' 38"E
L12	31.87	N3° 41' 05"W
L13	34.17	N88° 33' 49"W
L14	27.49	N75° 58' 58"W

A PLAT OF
GOODWIN ESTATES
 A SUBDIVISION OF
**PARCELS 1 AND 2,
 FORTY ACRE EXEMPTION 2011-82-EXM
 (2011-021123-0)**
 PALMER RECORDING DISTRICT
 STATE OF ALASKA
 LOCATED WITHIN
 S 1/2 SEC. 10, T.18N. R.1E. SM, AK
 CONTAINING 80.04 ACRES MORE OR LESS

RECEIVED
 JAN 17 2020
 PLATTING

**HANSON
 LAND SOLUTIONS**
 305 EAST FIREWEED AVENUE
 PALMER, ALASKA, 99645
 (907)746-7738

6C



MATANUSKA-SUSITNA BOROUGH

Planning and Land Use Department

350 East Dahlia Avenue • Palmer, AK 99645

Phone (907) 861-7833 • Fax (907) 861-7876

www.matsugov.us • planning@matsugov.us

MEMORANDUM

DATE: January 21, 2020

TO: Platting Board

FROM: Eileen Probasco, Planning Director 

RE: Platting Board Resolution 2020-004
Recommending Assembly of the 2020 Subdivision Construction Manual

In April of 2016 the Mat-Su Borough Assembly signed Resolution 17-003 supporting the rewrite of the 1991 Subdivision Construction Manual (SCM). Department of Public Works and Planning staff then began work on a draft update. Once created, a group of subject matter experts was formed to review the document, consisting of local Land Surveyors, Civil Engineers, Developers, Homebuilders, Board Members and borough staff. Their review meetings began in June of 2018. They met 27 times over the next 18 months, with all but three meetings being full day meetings. The 2020 Subdivision Construction Manual is the results of that effort.

Major changes to the document are:

- Removed Sections on *Subdivision Agreements* and *Inspection Fees* (these are addressed elsewhere in code).
- Removed Driveways from the SCM and created a new MSB Chapter 11.12 Driveways
- Changed the title of the *Nonresidential Road Section* to *Major Road Corridors* and added Frontage/Backage and Connector Street Standards.
- Combined all of the Residential Street Design Criteria into one table for ease of use.
- Increased Roadway width for Residential, Residential Subcollector and Residential Collector Roads for added safety.
- Increased ADT from 6 daily trips to 10.
- Major rewrite of the *Drainage Section*.
- Added a Section on *Easements*.
- All drawings updated and placed within the body of the manual rather than in an appendix. (*finalization of drawings is underway and will be included in the document upon their completion.*)

Upon completion of the final draft, the SCM Working group adopted their Resolution 20-01 with the following recommendations:

Providing Outstanding Borough Services to the Matanuska-Susitna Community

- Assembly approval of the 2020 Subdivision Construction Manual
- Assembly approval of an ordinance creating MSB 11.12 Driveways
- Assembly consideration of a variety of other actions to address transportation issues in the valley.

A tentative schedule for completion of the project is included with the packet.

Staff recommends approval of Platting Board Resolution 2020-004.



MATANUSKA-SUSITNA BOROUGH

Planning and Land Use Department

350 East Dahlia Avenue • Palmer, AK 99645

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www.matsugov.us • planning@matsugov.us

PROGRESS STATUS UPDATE 2020 Subdivision Construction Manual Rewrite January 20, 2020

In April of 2016 the Mat-Su Borough Assembly signed Resolution 17-003 supporting the rewrite of the 1991 Subdivision Construction Manual (SCM). Department of Public Works and Planning staff then began work on a draft update. Once created, a group of subject matter experts was formed to review the document, consisting of local Land Surveyors, Civil Engineers, Developers, Homebuilders, Board Members and borough staff. Their review meetings began in June of 2018. They met 27 times over the next 18 months, with all but three meetings being full day meetings. The 2020 Subdivision Construction Manual is the results of that effort.

Major changes to the document are:

- Removed Sections on *Subdivision Agreements* and *Inspection Fees* (these are addressed elsewhere in code).
- Removed Driveways from the SCM and created a new MSB Chapter 11.12 Driveways
- Changed the title of the *Nonresidential Road Section* to *Major Road Corridors* and added Frontage/Backage and Connector Street Standards.
- Combined all of the Residential Street Design Criteria into one table for ease of use.
- Increased Roadway width for Residential, Residential Subcollector and Residential Collector Roads for added safety.
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- All drawings updated and placed within the body of the manual rather than in an appendix. *(finalization of drawings is underway and will be included in the document upon their completion.)*

Upon completion of the final draft, the SCM Working group adopted their Resolution 20-01 with the following recommendations:

- Assembly approval of the 2020 Subdivision Construction Manual
- Assembly approval of an ordinance creating MSB 11.12 Driveways
- Assembly consideration of a variety of other actions to address transportation issues in the valley.

A tentative schedule for completion of the project and all other referenced documents can be found on the web page link below.

For further information, please contact one of the project managers:

Eileen Probasco eileen.probasco@matsugov.us

Fred Wagner frederic.wagner@matsugov.us

WEB PAGE LINK: <https://www.matsugov.us/projects/subdivision-construction-manual-2018-rewrit>

NEXT STEPS FOR SCM and Chapter 11.12 Driveways – Target dates

January 17, 2020	Post on Planning's web page and distribute final draft for information and review to: TAB, LRSAAB, Platting Board, PC and Assembly (alternate date – Monday January 20)
January 24, 2020	TAB Meeting – adopt resolution (opportunity for special meeting if more time is needed)
February 20, 2020	Local RSA Advisory Board – adopt resolution (opportunity for March 19 meeting if more time is needed)
February 6, 2020 February 20, 2020	Platting Board Worksession Platting Board Resolution adoption (opportunity for March 5 meeting if more time is needed)
February 3, 2020 March 2, 2020	Planning Commission Introduction Planning Commission Public Hearing and Resolution adoption (opportunity for March 16 if more time is needed)
March 17, 2020 April 7, 2020	Assembly Introduction Assembly Public Hearing and Adoption

Adopted: 01/10/17

**MATANUSKA-SUSITNA BOROUGH
RESOLUTION SERIAL NO. 17-003**

A RESOLUTION OF THE MATANUSKA-SUSITNA BOROUGH ASSEMBLY SUPPORTING THE RE-WRITE OF THE BOROUGH'S 1991 SUBDIVISION CONSTRUCTION MANUAL.

WHEREAS, the Matanuska-Susitna Borough was formed in 1964 and is charged by the state of Alaska to perform land use and planning, which includes subdivision of lands; and

WHEREAS, in 1988 the Subdivision Construction Manual was adopted as the document guiding road construction, drainage, and utilities during construction of residential subdivisions; and

WHEREAS, in 1991 the manual was amended to modify some of the original construction standards, and was amended again in 2007 to incorporate standards for culvert construction on anadromous streams; and

WHEREAS, the 1991 version with culvert amendments is still the document being used; and

WHEREAS, since the manual's adoption, the Borough's transportation system has been developed, one subdivision at a time, with minimal coordination on a regional level; and

WHEREAS, several unsuccessful attempts have been made to update the manual over the past 20 years; and

WHEREAS, the Borough population, along with the number of subdivisions, has grown significantly since the construction manual was created, and

WHEREAS, state and federal requirements and design guidelines for road construction have changed greatly since the manual was crafted; and

WHEREAS, advancements in engineering and technology over the past 25 years allow for a greater range of roadway and utility construction options that are not addressed in the 1991 manual; and

WHEREAS, the Borough's road system efficiency and safety have been challenged by lack of coordination and connection of subdivision roads and outdated road construction requirements, which can lead to increased taxpayer costs for separate road upgrade projects; and

WHEREAS, emergency response can be slowed substantially by roads that have not been constructed to appropriate standards; and

WHEREAS, future growth must be anticipated and accommodated by current subdivision construction; and

WHEREAS, the Borough is working on a revised road classification schedule, which should be reflected in the manual; and

WHEREAS, the cost of maintaining Borough roads is increasingly challenging, often due to poor design and construction oversight.

NOW, THEREFORE, BE IT RESOLVED, that the Assembly hereby supports revision of the 1991 subdivision construction manual.

BE IT FURTHER RESOLVED, that the following issues, to name a few, have been identified as requiring revision:

- consider the Borough's updated road classification information;
- incorporate most recent data from State and Federal requirements and codes;
- incorporate fire and life safety codes regarding roadways and subdivision access;
- clarify confusing/conflicting language;
- modify and clarify drainage requirements as needed;
- modify and clarify utility requirements as needed;
- update requirements for intersections, temporary turnarounds, and cul-de-sacs;
- revisit final road inspection and acceptance requirements;
- revisit stub roads and connectivity;
- revisit standards for pioneer and mountain access roads;
- modify and clarify traffic impact analysis requirements as needed;
- modify and clarify right-of-way width requirements as needed;
- discuss need for pedestrian facilities with road development to increase safety for residents and students;
- review driveway standards;
- review urban versus rural road standards; and
- update diagrams.

BE IT FURTHER RESOLVED, that the Assembly supports the manual being revised in-house, with an internal working team consisting of members of the Planning Department, Capital Projects

Department, Department of Public Works, and Department of
Emergency Services.

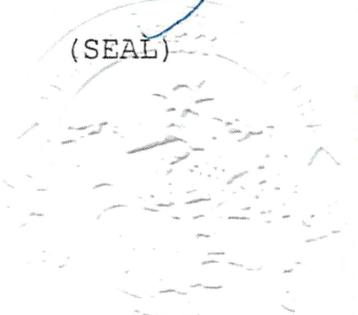
ADOPTED by the Matanuska-Susitna Borough Assembly this 10 day
of January, 2016.


VERN HALTER, Borough Mayor

ATTEST:


LONNIE R. McKECHNIE, CMC, Borough Clerk

(SEAL)



PASSED UNANIMOUSLY: Sykes, McKee, Colligan, Mayfield, Doty, and
Kowalke

**MATANUSKA-SUSITNA BOROUGH
SCM UPDATE WORKING GROUP
RESOLUTION 20-01**

A RESOLUTION OF THE MSB SUBDIVISION CONSTRUCTION MANUAL UPDATE WORKING GROUP RECOMMENDING ADOPTION OF THE 2020 SUBDIVISION CONSTRUCTION MANUAL AND ADDITIONAL RECOMMENDATIONS.

WHEREAS, the Assembly adopted Resolution 17-003 requesting an update of the 1991 subdivision construction manual; and

WHEREAS, the MSB planning department, capital projects department and public works department worked together and created a "first revision" public review draft document and distributed it for public review and comment; and

WHEREAS, as a result of the first revision draft, an informal working group was formed, consisting of MSB staff and TAB representatives, utilities, engineers, surveyors, road builders and developers; and

WHEREAS, the working group met 26 times between July 2018 and January 2020 and created a second revision draft document, for further public review and submittal to the Local Road Service Area Advisory Board, Transportation Advisory Board, Platting Board, and Planning Commission; and

WHEREAS, the working group is committed to ensuring that quality residential development and road construction occurs in the borough; and

WHEREAS, the working group strove to create a document that would:

1. Keep the cost of housing affordable in the valley,
2. Ensure that future roads are designed and constructed in a way that will not inhibit efficient maintenance;
3. Ensure that connectivity of subdivision roads is considered during subdivision design;
4. Reduce the cost burden of road maintenance and upgrades .

NOW, THEREFORE, BE IT RESOLVED, that the MSB SCM working group recommends assembly adoption of the 2020 Subdivision Construction Manual.

BE IT FURTHER RESOLVED that the working group recommends adoption of an ordinance amending MSB Title 11 Roads, Streets, Sidewalks and Trails, to add a section that specifically addresses driveways.

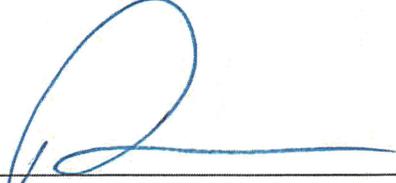
BE IT FURTHER RESOLVED that the working group recommends further actions that the assembly should take, including but not limited to:

1. Reinstitute the mandatory land use permit.
2. Fund an update to the current Official Streets and Highways Map.
3. Create a more detailed Design Criteria Manual that would include regulations for current and future borough roads as well as bridges, etc.
4. Continue to review the subdivision code and subdivision construction manual to identify areas for improvement.

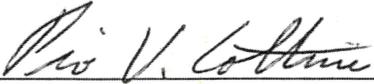
5. Review options for improving the structure for funding of road construction and maintenance including but not limited to:
- a. Implement some type of an impact fee or transaction fee that could be designated for road maintenance/improvements, to supplement the current RSA tax structure.
 - b. Review the current RSA tax structure for more funding flexibility (i.e. fewer RSA's covering the same area).
 - c. Pursue adoption of road powers by putting the question on the ballot.

BE IT FURTHER RESOLVED that if substantial changes are proposed to the document following its distribution for review, the SCM working team reserves the opportunity to review the changes prior to final assembly approval

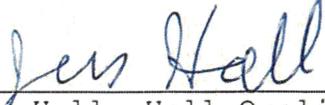
ADOPTED by the MSB SCM working group this 14th day of January, 2020.



Gary LoRusso, PLS, Keystone Surveying



Pio Cottini, PLS, Cottini Land Surveying



Jess Hall, Hall Quality Homes

Dan Elliott

Dan Elliott, Local RSA Advisory Board and TAB Member

Josh Cross

Josh Cross, PE, PTOE, Kinney Engineering LLC, and TAB Member

Curt Holler

Curt Holler, PE, Holler Engineering

Signature Pending

Dave Miller, Summit Development

Robert Yundt

Robert Yundt, Robert Yundt Homes, and Mat-Su Homebuilders Past Chair

Bill Klebesadel

Bill Klebesadel, PE, Pioneer Engineering and previously City of Wasilla

Matt Garner

Matt Garner, Borough Right-Of-Way Inspector

Jamie Taylor

Jamie Taylor, PE, Borough Civil Engineer

Fredric Wagner

Fredric Wagner, PLS, Platting Officer

Eileen Probasco

Eileen Probasco, Planning Director

MATANUSKA-SUSITNA BOROUGH
PLATTING BOARD RESOLUTION NO. 2020-005

A RESOLUTION OF THE MATANUSKA-SUSITNA BOROUGH PLATTING BOARD SUPPORTING AN ORDINANCE AMENDING MSB 43.05.015(B)3 TO ADOPT THE 2020 SUBDIVISION CONSTRUCTION MANUAL.

WHEREAS, the Assembly adopted Resolution 17-003 requesting an update of the 1991 subdivision construction manual; and

WHEREAS, the MSB planning department, capital projects department and public works department worked together and created a "first revision" public review draft document and distributed it for public review and comment; and

WHEREAS, as a result of the first revision draft, an informal working group was formed, consisting of subject matter experts including MSB staff, RSA and TAB representatives, utilities, engineers, surveyors, road builders and developers; and

WHEREAS, the working group met 26 times between July 2018 and January 2020 and created a second revision draft document, for further review and submittal to the appropriate boards; and

WHEREAS, the working group adopted their resolution 20-01 recommending approval of the 2020 Subdivision Construction Manual, and that the Assembly consider a variety of other actions concerning land use, subdivisions, transportation issues and road funding at a future date.

NOW, THEREFORE, BE IT RESOLVED, that the Matanuska-Susitna Borough Planning Commission hereby recommends adoption of an ordinance amending MSB 43.05.015(B)3 to adopt the 2020 Subdivision Construction Manual.

ADOPTED by the Matanuska-Susitna Borough Planning Commission this ___ day of ___, 2020.

Jordan Rausau, Chair

ATTEST

SLOAN VONGUNTEN, Platting Clerk

(SEAL)

YES:

NO:

Matanuska-Susitna Borough Public Works Department

Subdivision Construction Manual

(Roads, Drainage, and Utilities)

January 23, 2020

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Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ADFG	Alaska Department of Fish and Game
ADT	Average Daily Traffic
ADOT&PF	Alaska Department of Transportation and Public Facilities
ATM	Alaska Test Method
DPW	Department of Public Works of the Matanuska-Susitna Borough
IFC	International Fire Code
ITE	Institute of Transportation Engineers
LRTP	Long Range Transportation Plan
MSB	Matanuska-Susitna Borough
N/A	Not applicable
NTP	Notice to proceed
OHWM	Ordinary high water mark
OSHP	Official Streets and Highways Plan
PUE	Public use easement
ROW	Right-of-way
VPD	Vehicles per day

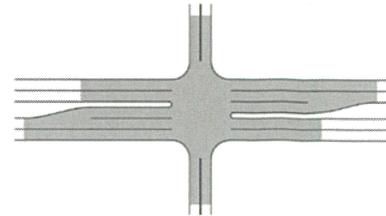
Definitions

Access Point	The location along a road at which a driveway or road intersects.
Arterial	A road that provides a high level of mobility within the transportation network. Arterials are access controlled with a minimal number of intersections or interchanges.
Average Daily Traffic	The total number of vehicle trips during a given time period (in whole days greater than one day and less than one year) divided by the number of days in that time period.
Backslope	On a roadway section in a cut, the portion of the roadside that slopes up from the roadside ditch and away from the roadway to the top of the cut, see Figure A-3.
Catchment Area	The total area contributing stormwater runoff to a particular point, site, or structure.
Collector	A road that links local roads with arterials and performs some duties of each. Collectors are access controlled with a moderate number of intersections and driveways.
Curve Return	The curve located at the corner of an intersection, connecting the roadway edge of one road to the roadway edge of an intersecting road or driveway.
Detention	The temporary storage of runoff, for later controlled release.
Drainage Pattern	The configuration of a drainage system including manmade and natural features within a catchment area.
Driveway	A vehicular access way between a road and a parking area within a lot or property.
Embankment	Earthen material that is placed and compacted for the purpose of raising the grade of a roadway.
Engineer	An individual who is registered as a Professional Civil Engineer in the State of Alaska.

Feasible Reasonable and capable of being done or carried out.

Foreslope On a roadway section, the portion of the roadside that slopes down and away from the roadway, see Figure A-3.

Functional Area The physical area of an intersection and the area extending both upstream and downstream which includes perception reaction distance, maneuver distance, and storage length.



Intersection The general area where two or more roads join or cross.

Local Road A road that provides access to abutting property, rather than to serve through traffic. Local roads are not access controlled and can have frequent intersections and driveways.

Lot Frontage A property line that abuts the right-of-way that provides access to the lot.

Ordinary High Water Mark The elevation marking the highest water level which has been maintained for a sufficient time to leave evidence upon the landscape. Generally, it is the point where the natural vegetation changes from predominately aquatic to upland species.

Positive Drainage Clear, unobstructed flow of water away from structures and roadways without localized ponding.

Public Use Easement Provides the rights for ingress, egress, roadways, right-of-way, public utilities, and slopes for cuts and fills. The rights are to the public in general, and public utilities governed by permits required under federal, state, and local laws and regulations. May also be known as a public access easement or right-of-way.

Regulated Stream Any watercourse along which the flood hazard areas have been mapped and approved by the Federal Emergency Management Agency; any stream which harbors fish, as determined by the Alaska Department of Fish and Game; or any stream designated as regulated by MSB.

Retention The prevention of runoff. Stormwater, which is retained, remains indefinitely, with the exception of the volume lost to evaporation, plant uptake, or infiltration.

Right-of-way	A strip of land reserved, used, or to be used for a street, alley, walkway, airport, railroad, or other public or private purpose.
Road	A general term denoting a public thoroughfare used, or intended to be used, for passage or travel.
Road Prism	The foundation that supports the roadway; see Figure A-3.
Roadway	The portion of a road that includes driving lanes and shoulders, see Figure A-3.
Segment	A portion of road between two significant intersections or an intersection and its terminus.
Shoulder	The portion of a roadway contiguous to any traveled way for lateral support of surface courses, see Figure A-3.
Street	A general term usually denoting an urban or suburban road.
Stub Road	A road segment, typically short in length, which terminates at the boundary of a subdivision or site plan, the purpose of which is to ultimately connect to abutting property when it is developed.
T-intersection	A three leg intersection in the form of a "T".
Through Street	A road given preferential right of way; roads which intersect a through street are controlled, such as with a stop sign or yield sign.
Water Body	A permanent or temporary area of standing or flowing water. Water depth is such that water, and not air, is the principal medium in which organisms live. Water bodies include, but are not limited to: lakes, ponds, streams, rivers, sloughs, and all salt water bodies.

Introduction

This manual is intended to accomplish the following goals:

- (1) To establish standards for the design and construction of transportation networks throughout the Matanuska-Susitna Borough.
- (2) To provide information and guidelines for the design, construction, and upgrade of roads, drainage facilities, and utilities within rights-of-way.
- (3) To develop and maintain a safer and more efficient transportation system.
- (4) To minimize operation & maintenance efforts.

Section A. Street Design

A01 General

These provisions establish appropriate standards for the design of roads. The purpose of these provisions is to:

- (1) promote the safety and convenience of motorized and non-motorized traffic;
- (2) promote the safety of neighborhood residents;
- (3) minimize the long term costs for maintenance and repair;
- (4) protect the residential qualities of neighborhoods by limiting traffic volume, speed, noise, and air pollution;
- (5) encourage the efficient use of land; and
- (6) minimize the cost of road construction and thereby restrain the rise in housing costs.

A02 Applicability

These standards apply to the design and construction of all subdivision improvements within the Matanuska-Susitna Borough (MSB), with the exception of those streets within cities that exercise road powers by ordinance.

A03 Street Classifications

Roads within the MSB fall within one of the following functional classifications, in accordance with the Long Range Transportation Plan (LRTP): Interstate, Principal Arterial, Minor Arterial, Major Collector, Minor Collector, and Local Road. Functional classification of a road is based on its function, design, and current potential use. The applicant may request review of the functional classification of existing roads abutting or affecting the design of a subdivision or land development during the preapplication process.

This section provides design guidance for roads falling under local road and minor collector functional classifications.

A03.1 Residential Street

Residential streets are local roads intended to carry the least amount of traffic at the lowest speed. The Residential street will provide the safest and most desirable environment for a residential neighborhood. Developments should be designed so that all, or the maximum number possible, of the homes will front on this class of street.

A03.2 Residential Subcollector Street

Residential Subcollector streets are local roads that carry more traffic than Residential streets.

A03.3 Residential Collector Street

Residential Collector streets are the highest order of residential streets and are a type of minor collector. In large residential developments, this class of street may be necessary to carry traffic from one neighborhood to another or from the neighborhood to other areas in the community. Residential Collector streets should provide the fewest direct accesses as possible.

A03.4 Mountain Access Road

Mountain Access Roads may be used in areas where the average cross slope exceeds 15 percent or to traverse terrain features in excess of 25 percent. Maintenance of Mountain Access Roads will be at the discretion of DPW. School bus access should be considered as school bus routes require all grades less than 10 percent. Mountain Access Road standards allow for steeper grades and switchbacks, but should otherwise be designed to Residential, Residential Subcollector, or Residential Collector standard as required by this section.

A03.5 Pioneer Road

Pioneer Roads may only be used where allowed by MSB or other applicable code. This classification establishes minimum requirements for roads providing physical access, but should otherwise be designed to Residential, Residential Subcollector, or Residential Collector standard as required by this section. No MSB maintenance will be provided for Pioneer Roads. Pioneer roads may be constructed offset from the centerline of the ROW to facilitate future expansion of the road.

A03.6 Alleys

Alleys are permitted provided legal and physical access conforms to MSB or other applicable code. No MSB maintenance will be provided for Alleys.

A03.7 Other Street Types

The above classifications may be further typed as one of the following streets. These other street types should be designed to Residential, Residential Subcollector, or Residential Collector standard as required by this section.

- (a) Frontage Street – streets parallel and adjacent to a major road corridor which provides access to abutting properties and separation from through traffic. See Section B for additional design standards.
- (b) Backage Street – streets that provide access to lots located between the Backage Street and a major road corridor. See Section B for additional design standards.
- (c) Connector Street – the portion of a street that connects a frontage or backage street to a major road corridor. See Section B for additional design standards.
- (d) Divided Street – streets may be divided for the purpose of accommodating environmental features or avoiding excessive grading. In such a case, the design standards shall be applied to the appropriate street classification and a single lane width with a shoulder on each side.

A04 Access Criteria

A04.1 Residential Street

- (a) A Residential street provides access to abutting properties.
- (b) The anticipated average daily traffic (ADT) volume on Residential streets shall not exceed 400. A loop street shall be designed such that the anticipated ADT at each terminus of the loop street does not exceed 400, see Figure A-1.
- (c) Residential streets may intersect or take access from an equal or higher order street. Both ends of a loop Residential street are encouraged to intersect the same collecting street and be designed to discourage through traffic.
- (d) Residential streets with only one inlet/outlet shall provide access to no more than 20 lots and not exceed 1000 feet in length (measured from the intersection point to the center point of the turnaround).

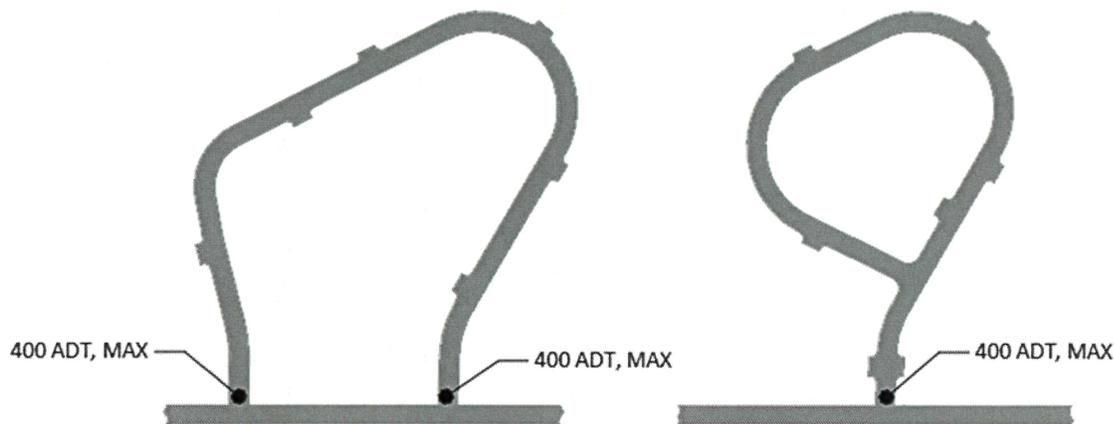


Figure A-1: Loop Residential Streets

A04.2 Residential Subcollector Street

- (a) A Residential Subcollector street provides access to abutting properties and may also move traffic from Residential streets that intersect it. Residential Subcollector streets are required when the ADT anticipated on the street will exceed the limits for Residential or when a street with only one inlet/outlet provides access to more than 20 lots or exceeds 1000 feet in length.
- (b) The anticipated ADT on Residential Subcollector streets shall not exceed 1000. A loop street shall be designed such that the anticipated ADT at each terminus of the loop street does not exceed 1000, see Figure A-2.
- (c) Residential Subcollector streets shall be designed to exclude all external through traffic that has neither origin nor destination on the Residential Subcollector or its tributary Residential streets. Adjacent parcels may acquire access if proven landlocked by legal or terrain features or if such Residential Subcollector access can be demonstrated to be beneficial to the public.
- (d) Residential Subcollector streets shall take access from a street of equal or higher classification.

- (e) Traffic calming elements should be considered for the design of Residential Subcollectors, such as avoiding long, straight segments and reducing the length of roadway from farthest lot to a collector.
- (f) Residential Subcollector streets shall be provided with two continuous moving lanes within which no parking is permitted.

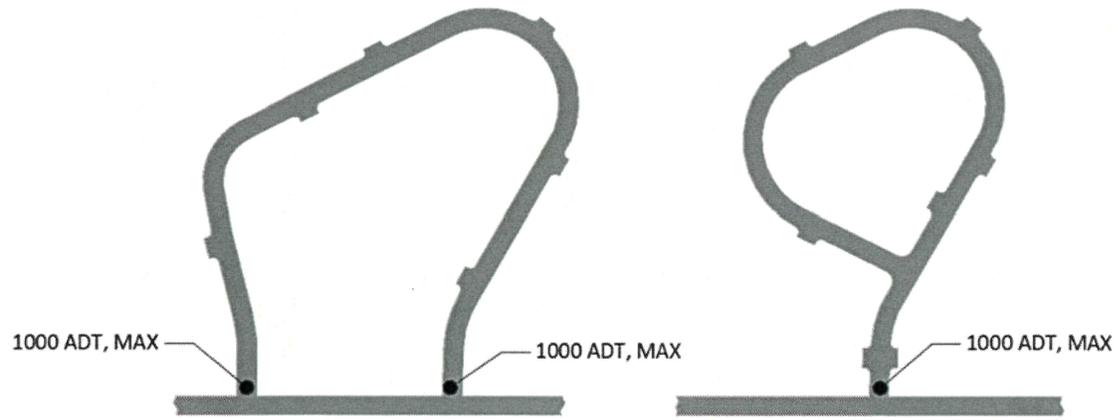


Figure A-2: Loop Residential Subcollector Streets

A04.3 Residential Collector Street

- (a) A Residential Collector street carries residential neighborhood traffic, but restricts or limits direct residential access. Residential Collector streets are required when the ADT anticipated on the street will exceed the limits for Residential Subcollectors.
- (b) Residential Collector streets should be designed to have as few residential lots directly fronting them as possible. When efficient subdivision design or physical constraints make this not possible, the average access point spacing shall be a minimum of 250 feet. Average access point spacing is calculated per segment and is equal to the segment length divided by the number of potential access points on both sides of the street. Undeveloped lots with only access to Residential Collector streets are counted as having at least one access point. When the average access point spacing on a segment of an existing Residential Collector street is less than 250 feet, the average access point spacing shall not decrease due to the subdivision.
- (c) Space shall be provided on these lots for turnaround so that vehicles will not have to back out onto Residential Collector streets.
- (d) Proposed access points on Residential Collector streets shall be shown on the preliminary plat.
- (e) Residential Collector streets shall be laid out to encourage connectivity within the transportation network.
- (f) If the anticipated ADT will exceed 3000, the street shall be classified at a higher level than Residential Collector by DPW.
- (g) Every Residential Collector shall be provided with no fewer than two access intersections to streets of equal or higher classification. If it is shown by the applicant that two accesses are not feasible, Residential Collector streets shall be provided with access to one street of equal or higher

classification and be designed to accommodate a future second connection to a street of equal or higher classification, or otherwise be approved by DPW.

- (h) All Residential Collector streets shall be provided with two continuous moving lanes within which no parking shall be permitted.

A04.4 Access through Existing Streets

The anticipated ADT on existing Residential streets used to access a proposed subdivision may exceed 400, but shall not exceed 800, if:

- (a) alternate road corridors are not available or feasible;
- (b) horizontal geometry or access density prohibits upgrade to a higher standard road; and
- (c) the traffic impacts are mitigated.

A04.5 Traffic Impact Mitigation for Access through Existing Streets

Traffic impact mitigation on existing residential streets can include but is not limited to:

- (a) Traffic control devices (signage, striping) on segments where potential ADT exceeds 440
- (b) LED street lighting, speed feedback signs, widened shoulders, inside corner widening for offtracking, or all-way stop intersections on segments where potential ADT exceeds 600.

A05 Design Criteria

The design criteria for Residential, Residential Subcollector, and Residential Collector streets, and Mountain Access and Pioneer roads are set forth in. Any unspecified design criteria shall meet or exceed the design criteria for the roadway design speed in the latest edition of *A Policy on Geometric Design of Highways and Streets* (AASHTO).

Table A-1: Residential Street Design Criteria

	Unit	Residential	Residential Subcollector	Residential Collector	Mountain Access ¹	Pioneer ¹
Average Daily Traffic	VPD	≤400	401 – 1000	1001 – 3000	–	–
Typical Section						
ROW Width ²	ft	60	60	60	60	60
Lane Width	ft	10	10	11	10	10
Shoulder Width	ft	2	2	2	0 ³	0 ³
Roadway Width	ft	24	24	26	20	20
Foreslope ⁴	h:v	3:1	3:1	4:1	2:1	3:1
Backslope ⁵	h:v	2:1	2:1	2:1	2:1 ⁶	2:1
Crown, gravel	%	3	3	3	3	3
Crown, pavement	%	2	2	2	2	–
Engineering Criteria						
Design Speed	mph	25	30	35	--	--
Posted Speed	mph	20	25	30	--	--
Stopping Sight Distance	ft	155	200	250	--	--
Horizontal Alignment						
Minimum Centerline Radius	ft	225	350	550	– ⁷	–
with DPW Approval	ft	190	275	400	–	–
Minimum Tangent Between Curves	ft	100	100	100	100	100
Maximum superelevation	%	N/A	N/A	4	N/A	N/A

¹ Where a value is not given, Mountain Access and Pioneer Roads shall meet the criteria of the anticipated street classification.

² ROW required for new dedications; width of existing ROW may vary.

³ Where grades exceed 7 percent, the shoulder width shall be 2 feet for a total roadway width of 24 feet.

⁴ Slope for the first 7.5 feet from the shoulder; may be steepened to 2:1 thereafter. Install guardrail when required by the latest edition of the *Roadside Design Guide* (AASHTO).

⁵ 2:1 Back slopes may be steepened to 1.5:1 if cuts exceed 5 feet and appropriate slope stabilization, as determined by the design engineer, is used. Retaining walls may be used to replace or augment backslopes.

⁶ Or backslope recommended by the design engineer based on actual conditions.

⁷ Switch backs are allowed provided cul-de-sac criteria is met or turning radius is 40 feet with a 2% grade.

	Unit	Residential	Residential Subcollector	Residential Collector	Mountain Access ¹	Pioneer ¹
Vertical Alignment						
Maximum Centerline Grade	%	10	10	10	15 ⁸	10
Minimum Rate of Vertical Curvature ⁹ ; Crest		12	19	29	–	–
Minimum Rate of Vertical Curvature ⁹ ; Sag		26	37	49	–	–
Minimum Flow Line Grades	%	0.5	0.5	0.5	1.0	0.5
Intersections						
Minimum ROW Corner Radius	ft	30	30	30	30	30
Minimum Curve Return Radius ¹⁰	ft	20	25	30	–	–
Maximum Grade on through street within 50 feet of intersection	%	7	7	4	9	7

⁸ Up to 15% grade with no more than 200 linear feet of over 10% grade with a minimum of 100 linear feet of less than 10% grade for runout between steeper sections. Maximum grade in a horizontal curve is 10%.

⁹ Rate of vertical curvature (K) is the length of curve (L) in feet per percent algebraic difference in intersecting grades (A); $K = L / A$

¹⁰ 40-foot minimum curve return radius at intersections with higher order streets.

A06 Typical Section

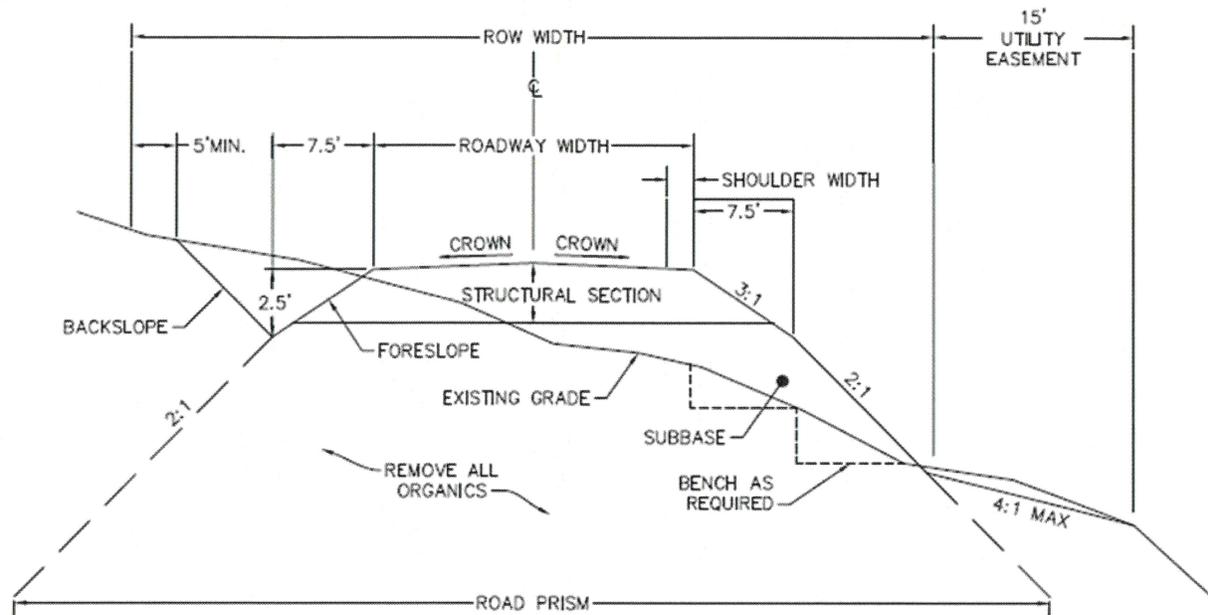


Figure A-3: Typical Section

A07 Turnarounds

Streets that exceed 200 feet in length (measured from the intersection point to the end of required construction) shall terminate with a constructed turnaround.

A07.1 Cul-de-sac Turnarounds

- (a) A cul-de-sac turnaround with a drivable surface diameter (shoulder to shoulder) of 85 feet centered in a ROW diameter of 120 feet shall be provided at the terminus of Residential and Residential Subcollector streets.
- (b) Cul-de-sac turnarounds shall meet the configuration and dimensions shown in Figure A-4.
- (c) The grade throughout the surface of a cul-de-sac shall not exceed 4 percent.

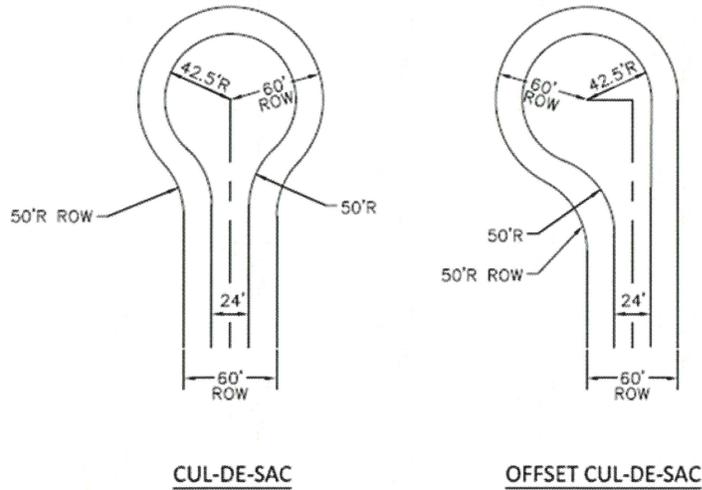


Figure A-4: Cul-de-sac Options

A07.2 Alternate Turnarounds

- (a) DPW may permit a street to terminate with an alternative turnaround that meets fire code when such a design is required by extreme environmental or topographical conditions, unusual or irregularly shaped tract boundaries, or when the location of the turnaround is intended to become an intersection.
- (b) Alternate turnarounds shall meet the configuration and dimensions shown in Figure A-5.
- (c) The grade throughout the turnaround surface shall not exceed 4 percent.

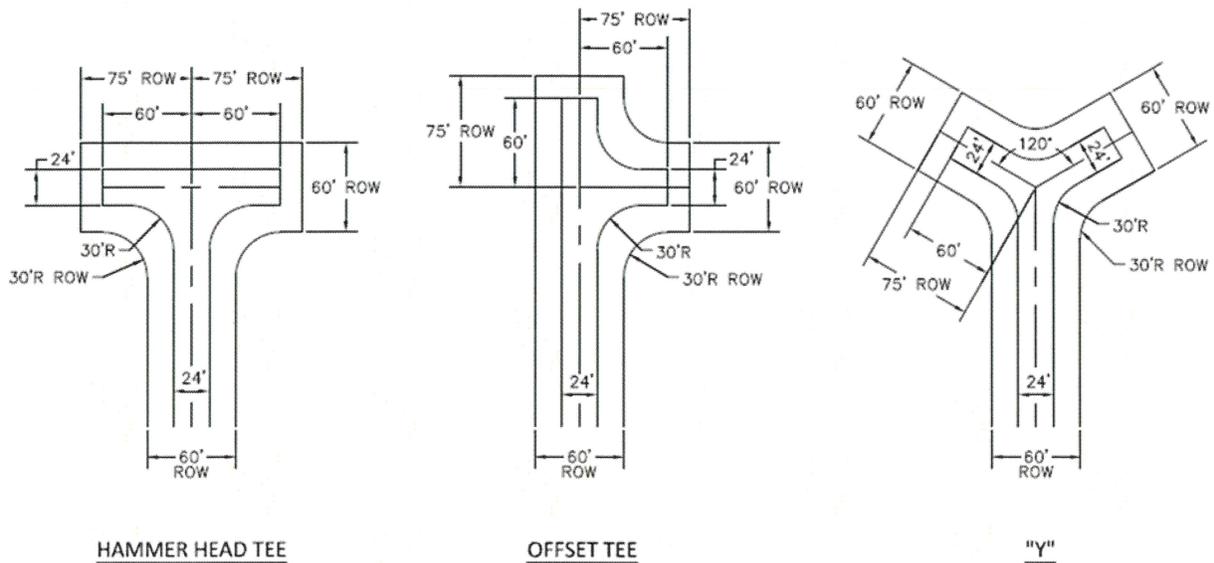


Figure A-5: Alternate Turnarounds

A08 Stub Streets

A08.1 Stub Street Construction

No construction is required if physical access is provided to all lots by adjoining streets as required by MSB or other applicable code.

A08.2 Temporary Turnarounds

All stub streets requiring construction will meet the requirements of A07. A temporary easement will be provided for the turnaround which will automatically terminate upon extension of the street and physical removal of the turnaround.

A09 Intersections

A09.1 Intersection Sight Distance

- (a) Whenever a proposed street intersects an existing or proposed street of higher order, the street of lower order shall be made a stop controlled street, unless alternate intersection control is used as allowed by this subsection.
- (b) Stop controlled streets shall be designed to provide intersection sight distance as specified in this subsection, Table A-2, and Figure A-6.
- (c) The entire area of the intersection sight triangles shown in Figure A-6 shall be designed to provide an unobstructed view from point A at 3.5 feet above the roadway to all points 3.5 feet above the roadway along the lane centerlines from point B to point C and point D to point E.
- (d) Sight distances less than the recommended shall only be used when there are topographical or other physical constraints outside of the applicant's control.
- (e) The minimum sight distances listed in Table A-2 are for a passenger car to turn onto a two-lane undivided street and minor road approach grades of 3 percent or less. For other conditions, the minimum sight distance should be calculated by the applicant's engineer according to *A Policy on Geometric Design of Highways and Streets* (AASHTO).
- (f) Sight distances less than the minimum, where no other options exist, will require alternate intersection control or warning signs as determined by the applicant's engineer and approved by DPW.
- (g) Intersection sight triangles shall be located in their entirety within ROW or a sight distance maintenance easement.
- (h) Yield controlled intersections shall conform to sight distance requirements according to *A Policy on Geometric Design of Highways and Streets* (AASHTO).
- (i) Intersections with state or other municipal ROW are subject to their respective requirements and review.

Table A-2: Recommended and Minimum Intersection Sight Distance

Design Speed or Posted Speed Limit (whichever is greater)	S _d Recommended	S _d Minimum
MPH	ft	ft
25	370	280
30	450	335
35	580	390
40	750	445
45	950	500
50	1180	555
55	1450	610
60	1750	665
65	2100	720

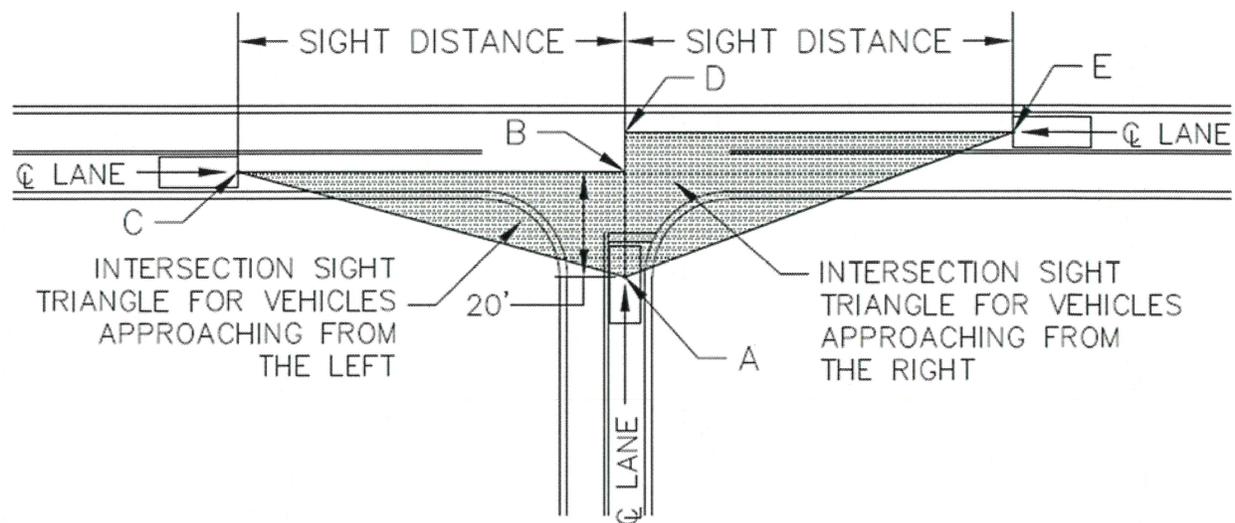


Figure A-6: Intersection Sight Distance

A09.2 Intersection Spacing

- (a) Minimum centerline to centerline distance between intersections on the same side or opposing sides of the through street shall be:
 - (1) 155 feet on Residential streets;
 - (2) 200 feet on Residential Subcollector streets;
 - (3) 300 feet on Residential Collectors and Minor Collectors; or
 - (4) 650 feet on higher order streets where other access standards do not exist.
- (b) If the above spacing along the through street cannot be met, intersections shall be aligned directly across from each other. Intersections on opposing sides of the through street may be offset up to 30 feet, with a preference for a left-right offset, as shown in Figure A-7.

- (c) Where pre-existing conditions do not allow for the above spacing and no other legal access exists, alternate spacing or offset most closely meeting (a) or (b) above may be allowed.
- (d) Additional intersections should be avoided within the functional area of major intersections with turning bays and approach tapers. Exceptions require DPW approval based upon constraints and no other feasible alternatives.

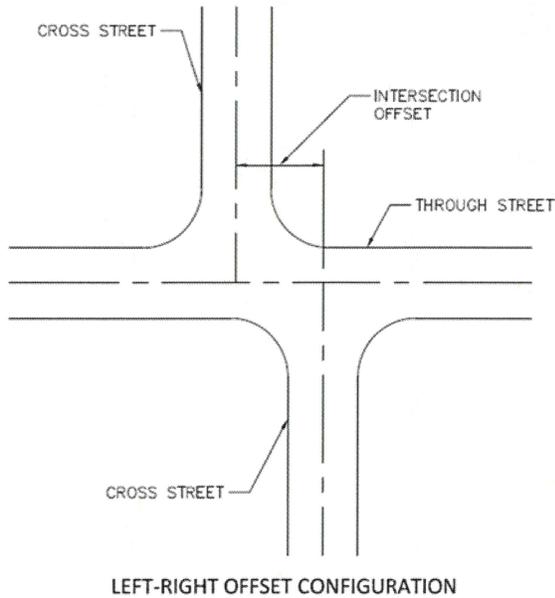


Figure A-7: Intersection Offset

A09.3 Minimum Intersection Angle

Streets should intersect with a straight segment at an angle as close to 90° as possible, but no less than 70°, for a minimum of 75 feet from the intersection point, as shown in Figure A-8.

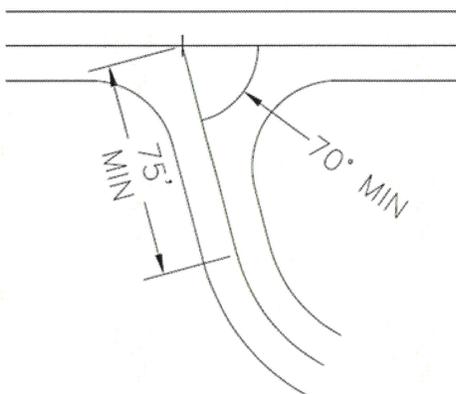


Figure A-8: Intersection Angle

A09.4 Landing

Controlled streets shall be provided with a 30-foot landing, conforming to Figure A-9, at its approach to a through street. The landing shall be sloped to match the crown of the through street. Vertical curves shall not be located in the landing to the extent feasible.

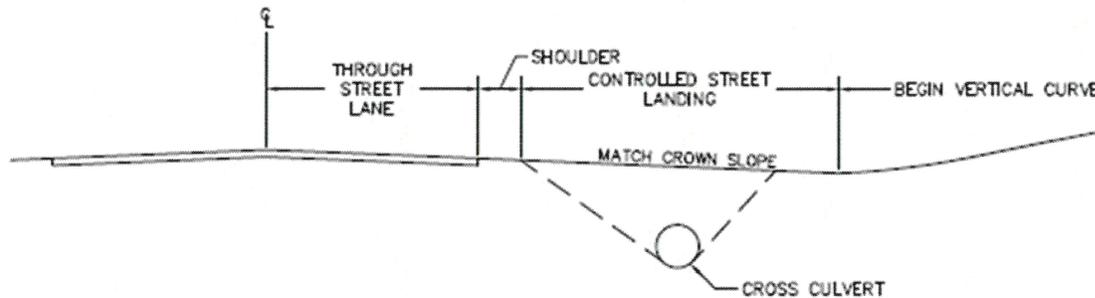


Figure A-9: Controlled Street Landing Profile

A09.5 Paved Apron

A proposed street which intersects an existing paved street shall be provided with a paved apron from the edge of the existing pavement to the end of the curve return plus 10 feet.

A10 Driveways

Driveways are not usually required to be constructed within the ROW at time of road construction. However, if an applicant chooses to construct driveways, driveway permits are required. The applicant may permit all driveways with one application. A driveway permit application can be obtained from the MSB Permit Center. Driveways onto state or other municipal ROW are subject to their respective requirements and review.

A11 Trailhead

Trailhead parking lot layout shall conform to applicable local, state, and federal requirements.

A12 Bicycle and Pedestrian Paths

Bicycle and pedestrian paths constructed within public ROW shall conform to the current edition of *Guide for the Development of Bicycle Facilities* (AASHTO), and any other applicable local, state, and federal requirements.

A13 Signage

Signs shall be provided and installed by the applicant in conformance with the latest edition of the *Alaska Traffic Manual* (ADOT&PF) and the *Alaska Sign Design Specifications* (ADOT&PF) prior to plat recordation.

- (a) Each street within a subdivision shall be identified and signed at its point of egress and ingress. Cul-de-sac streets will be signed and identified at their point of ingress
- (b) Intersection control signs shall be provided at designated intersections within the confines of the subdivision and at the intersection with the access road, if applicable.
- (c) Speed limit signs shall be provided where practical.
- (d) If a constructed stub street provides access to two or fewer lots and has no turnarounds a sign indicating a dead-end street shall be posted.
- (e) If a dedicated stub street is not constructed, no signs are required.
- (f) Install signs according to the criteria in Figure A-10, Figure A-11, and Figure A-12.
- (g) Signs within state or other municipal ROW are subject to their respective requirements and review.

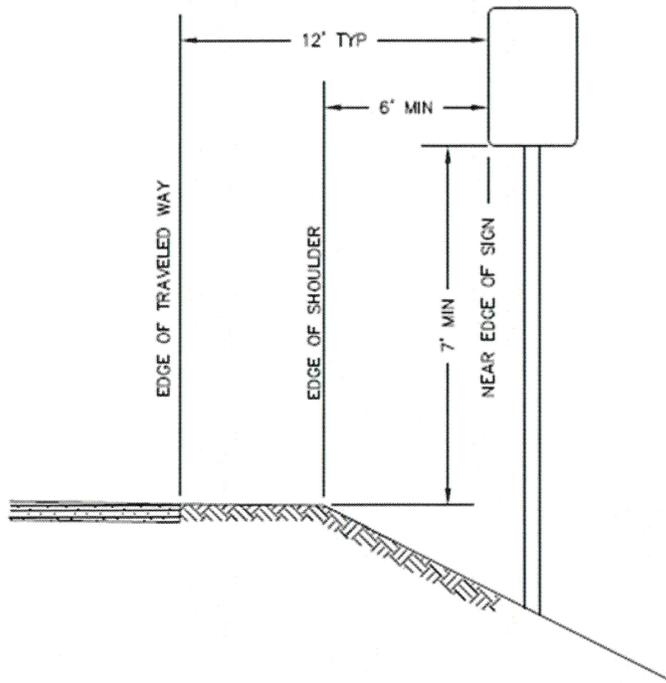


Figure A-10: Sign Placement

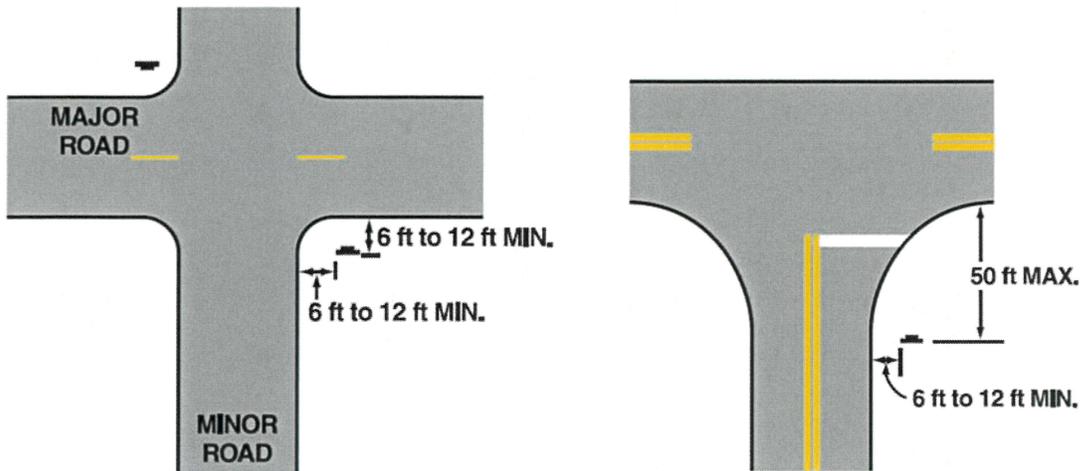
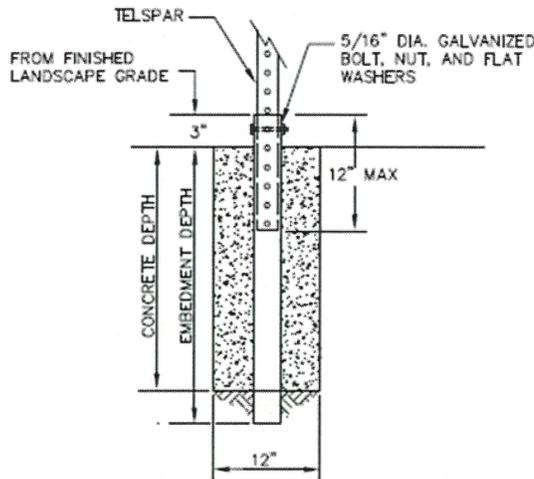


Figure A-11: Stop Sign Location



PERFORATED STEEL TUBES (P.S.T.) (12ga. - .105" Wall Thickness)			
SIGN SURFACE AREA SQ. FT.	POST SIZE	EMBEDMENT DEPTH	CONCRETE DEPTH
7' OR LESS	2" X 2"	27"	24"
GREATER THAN 7'	2 1/2" X 2 1/2"	33"	30"

Figure A-12: Concrete Foundation for Sign Post

A14 Railroad Crossings

All access requiring a crossing of the Alaska Railroad shall be subject to the *Alaska Policy on Railroad/Highway Crossings* (Alaska Railroad).

A15 Average Daily Traffic

- (a) The following formula shall be used to determine the required classification of streets:
ADT = Number of lots x 10 for single-family residential use.
- (b) See Section G for other land uses.
- (c) For subdivisions of five or more lots, submit potential ADT calculations for the following locations with the preliminary plat:
- (1) at each intersection within the subdivision,
 - (2) at each intersection en route to an existing Residential Collector street or higher classification, and
 - (3) at an existing Residential Collector street or higher classification.

A16 Design Deviations

Every effort will be made to comply with the standards of this section. Design deviations will be considered to address extenuating circumstances including but not limited to: existing substandard ROW, environmental conditions, or existing utilities or other structures. Design deviation requests shall be in writing and should contain supporting information, justification, and suggested solutions. Design deviations may be allowed by DPW only for matters that do not fall under the jurisdiction of a Board or Commission. In no circumstances will a roadway width less than 20 feet or foreslopes steeper than 2:1 be allowed. Residential Collector streets shall be no less than 24 feet wide.

Section B. Major Road Corridors

B01 General

Major road corridors include major collectors, arterials, and interstates. This section provides references to and guidelines for the design and construction of major road corridors within the MSB.

B02 Right-of-way and Surface Widths

Classification	Minimum ROW Width (ft)	Standard Lane Width (ft)	Number of Lanes	Shoulder Width (ft)
Major Collector	80	12	2 - 3	4
Arterial	100	12	3 - 4	4 – 8
Interstate	200	12	4 - 6	12

B03 Frontage, Backage, and Connector Street Standards

Subdivisions adjacent to planned or existing major road corridors shall plan for future frontage or backage streets when any of the following conditions apply, unless it is shown by the applicant to be not necessary or feasible for future development and public safety with non-objection from the road authority.

- (a) Subdivisions accessing roads that are classified by ADOT&PF as Interstates.
- (b) Subdivisions accessing roads that are or are projected to grow above 20,000 vehicles per day (VPD).
- (c) Subdivisions accessing roads that are or are projected to have four or more lanes or median control per the LRTP or OSHP.
- (d) Subdivisions that require a second access route.
- (e) To gain access to an existing or planned signal.
- (f) Where access to a minor arterial or collector as a connector road is feasible.

B03.1 Separation Distances

Minimum ROW to ROW separation distance between major corridors and frontage or backage streets shall be:

- (a) 0 feet for locations with no connector street to the major road corridor;
- (b) 100 feet for locations with a connector street to the major road corridor that lie between section lines and planned or existing intersections with other major road corridors;
- (c) 300 feet for locations where the connector street to the major road corridor is on a section line or planned or existing major road corridor.

SCM Committee FINAL DRAFT

January 23, 2020

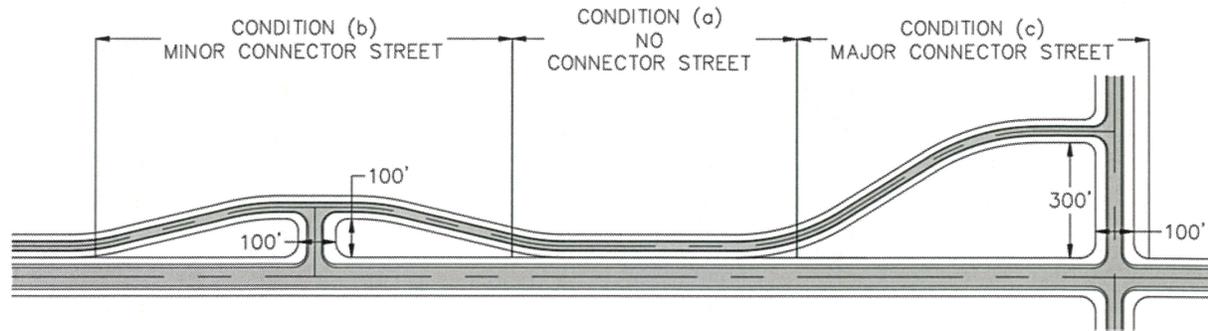


Figure B-1: Frontage Street Configurations

B03.2 Design Standards

- (a) Frontage streets
 - (1) Minimum centerline radii may be reduced near intersections with through connector streets.
- (b) Connector streets
 - (1) 100-foot ROW width desirable.
 - (2) Minimum 40-foot radius curve returns at the major road corridor.
 - (3) Minimum 4-foot wide shoulders for 100 feet from the edge of roadway of the major road corridor.
 - (4) Minimal direct access.

B03.3 Dedication and Setbacks

Dedicate ROW or additional building setbacks to allow for the frontage, backage, and connector street standards in this manual. The applicant shall prove that frontage, backage, and connector street dedications or building setbacks are in a practical location where road construction is feasible in accordance with this manual. The applicant shall be required to submit plan, profile, and cross-sections if existing grades along the proposed route exceed 10 percent, existing cross slopes exceed 15 percent, or if existing utilities or other physical features appear to create impediments to a road design meeting standards of this manual.

B04 Access Standards

- (a) The average access point spacing on major road corridors, where other access standards do not exist, shall not exceed the minimums listed in Table B-1, based on the posted speed limit. Average access point spacing is calculated per segment and is equal to the segment length divided by the number of access points on both sides of the street. Undeveloped lots with only access to the major road corridor are counted as having at least one access point.
- (b) When the average access point spacing on a segment of an existing major road corridor is less than the minimum listed in Table B-1, the average access point spacing shall not decrease due to the subdivision.

Table B-1: Average Access Point Spacing

Posted Speed Limit (mph)	Minimum Average Access Point Spacing (feet)
30	250
35	300
40	360
45	425
50	495
55	570

B05 Future Corridors

Routes proposed for future upgrade or construction as designated in the LRTP or OSHP shall have building setbacks established which will prohibit the location of any permanent structure within the future corridor, unless it is shown to be unnecessary. Label the proposed road corridor and the building setback line on the Final Plat. The area within the proposed road corridor shall be excluded from useable septic area calculations. The area within the proposed road corridor and building setbacks shall be excluded from useable building area calculations.

B06 References

The following publications shall be used for design and construction standards of these classes of streets that are not otherwise established herein:

- (a) *A Policy on Geometric Design of Highways and Streets*, AASHTO (current edition).
- (b) *Standard Specifications for Highway Construction*, ADOT&PF (current edition);
- (c) *Standard Modifications to the ADOT&PF Standard Specifications for Highway Construction*, MSB (latest revision)
- (d) *Alaska Highway Preconstruction Manual*, ADOT&PF (latest revision)

Section C. Construction Requirements

C01 General

This section establishes minimum construction requirements. Prior to any ground disturbing activities, call the Alaska Dig Line for utility locates in accordance with AS 42.30.400.

C02 Road Construction

C02.1 Clearing

Cut and dispose of all trees, down timber, stumps, brush, bushes, and debris. Cut trees and brush to a height of not more than 6 inches above the surrounding ground. Clear the ROW, slope easements, and sight distance triangles. Where ROW exceeds 60 feet, clear a minimum of 60 feet. Clear utility easements, if used, for utilities constructed with the development.

C02.2 Grubbing

Remove and dispose of all stumps, roots, moss, grass, turf, debris, or other deleterious material within the fill and cut catch limits of the road plus 5 feet on each side, within the ROW, and cleared utility easements for underground utilities.

C02.3 Disposal

Dispose of clearing and grubbing debris in an area designated by the applicant outside of all ROW, platted utility easements, and platted private road corridors. Organic debris 3 inches in diameter by 8 inches long, or smaller, may be left in place, outside of the road prism.

C02.4 Slit Trenches

Slit trenches are not allowed in the ROW. Utility easements may be used as a borrow source above a 2:1 extension of the road prism, as shown in Figure A-3. Topsoil or other organic non-deleterious material may be disposed within the utility easement. Compact the disposal area with heavy equipment and grade the surface with positive drainage no steeper than 4:1 and no lower than the ditch line. Submit an as-built drawing showing the horizontal locations of borrow extraction along the road corridor with the Final Report.

C02.5 Embankment Construction

- (a) Construct the road with the required structural section, see Figure C-1, and dimensions, see Table A-1 and Figure A-3, as determined by its classification.
- (b) Prepare the subgrade. Remove all organics from the area below the road prism and dispose in locations where embankment is not proposed. Bench existing slopes that are steeper than 4:1, measured at a right angle to the roadway, where roadway embankment is to be placed.
- (c) Place material meeting, or verify in-situ material meets, the requirements for Subbase specified in subsection C07 to a minimum depth of 20 inches with the upper 6 inches having no material with

a diameter larger than 6 inches. Place embankment in horizontal layers not to exceed 24 inches (uncompacted) for the full width of the embankment and compact as specified before the next lift is placed.

- (d) Place 4 inches of Surface Course meeting the requirements specified in subsection C07. Finish with a 3 percent crown, and compact as specified.
- (e) Compact the entire road prism to not less than 90 percent of the maximum dry density. Compact the top 24 inches to not less than 95 percent of the maximum dry density. Determine compaction in accordance with the *Standard Specifications for Highway Construction* (ADOT&PF) and any MSB Standard Modifications. Compaction tests on the subbase layer shall be taken at representative locations along the roadways as follows:
 - (1) a minimum of three;
 - (2) at least one per segment;
 - (3) one additional test per 1000 linear feet, or portion thereof, when the combined length of roadway exceeds 1000 linear feet;
 - (4) at least one out of every three within three feet of the shoulder, and the remainder in the center of a driving lane.
- (f) For paved roadways, substitute Surface Course with a minimum of 2 inches of Base Course and 2 inches of HMA Type II, Class B in accordance with Appendix A. The width of the pavement shall be equal to two lane widths and finished with a 2 percent crown. Pavement edges shall be backed with additional Base Course graded and compacted flush with the pavement surface and tapered to the edge of the roadway. The pavement shall be washed or swept immediately following shouldering work.
- (g) Remove all loose material exceeding 6 inches in diameter from the ditches and foreslopes. Where slopes are 3:1 or steeper and longer than 10 feet measured along the slope face, trackwalk perpendicular to the slope, or the equivalent, to form 1-inch wide grooves parallel to the road no more than 12 inches apart.
- (h) Permanently stabilize backslopes 3:1 or steeper. Stabilization can be part of a subdivision agreement. Stabilization may be allowed to establish during the warranty period.

C02.6 Unsuitable Subgrades

When structurally unsuitable material such as peat, saturated material, or permafrost are present within the ROW, provide an appropriate structural design for approval by DPW, according to Section F, prior to construction. Place embankment to a depth that will produce a stable road surface with a final grade 18 inches above the surrounding ground.

C03 Roads Outside of a Road Service Area

Roads outside of a Road Service Area are not subject to the requirement for Surface Course.

C04 Pioneer Road Construction Requirements

Pioneer roads, whether proposed or existing, shall meet the requirements of Figure C-1,

Table A-1, and Figure A-3. Place material meeting, or verify in-situ material meets, the requirements for Subbase specified in subsection C07 to a minimum depth of 12 inches. Additional road embankment may be required to provide a stable road surface. Surface Course is not required. Pioneer roads may be constructed offset from the centerline of the ROW to facilitate future expansion of the road. Cross drainage culverts, minimum 18 inch diameter, will be installed where determined necessary and 24 inch ditches will be provided for drainage.

C05 Winter Construction

Winter construction may be allowed. DPW will not accept any roads until all ground has thawed and any settlement areas corrected.

C06 Alternate Methods and Materials

Use of alternate materials and road construction methods that will more appropriately fit the conditions of the specific road locations, following general engineering practices, may be proposed by the applicant or their engineer in writing. Final acceptance of such plans must be approved by DPW.

C07 Materials

C07.1 Subbase

- (a) Is aggregate containing no muck, frozen material, roots, sod, or other deleterious matter;
- (b) has a plasticity index not greater than 6 as tested by Alaska Test Method (ATM) 204 and ATM 205; and
- (c) meets the requirements of Table C-2, as determined by ATM 304.

C07.2 Base Course

- (a) Crushed stone or crushed gravel, consisting of sound, rough, durable pebbles or rock fragments of uniform quality;
- (b) free from clay balls, vegetable matter, or other deleterious matters;
- (c) meets the requirements of Table C-1; and
- (d) meets the requirements of Table C-2, as determined by ATM 304.

C07.3 Surface Course

- (a) Is a screened or crushed gravel, consisting of sound, rough, durable pebbles or rock fragments of uniform quality;
- (b) free from clay balls, vegetable matter, or other deleterious matters; and
- (c) meets the requirements of Table C-2, as determined by ATM 304.

Table C-1: Aggregate Quality Properties for Base Course

Property	Test Method	Base Course
L.A. Wear, %	AASHTO T 96	50, max
Degradation Value	ATM 313	45, min
Fracture, %	ATM 305	70, min
Plastic Index	ATM 205	6, max
Sodium Sulfate Loss, %	AASHTO T 104	9, max (5 cycles)

Table C-2: Aggregate Gradations

Sieve Designation	Subbase	Base Course	Surface Course
1 1/2 inch			100
1 inch		100	
3/4 inch		70 to 100	70 to 100
3/8 inch		50 to 80	50 to 85
No. 4	20 to 60	35 to 65	35 to 75
No. 8		20 to 50	20 to 60
No. 50		6 to 30	15 to 30
No. 200	0 to 10	0 to 6	7 to 13

(Percent Passing By Weight)

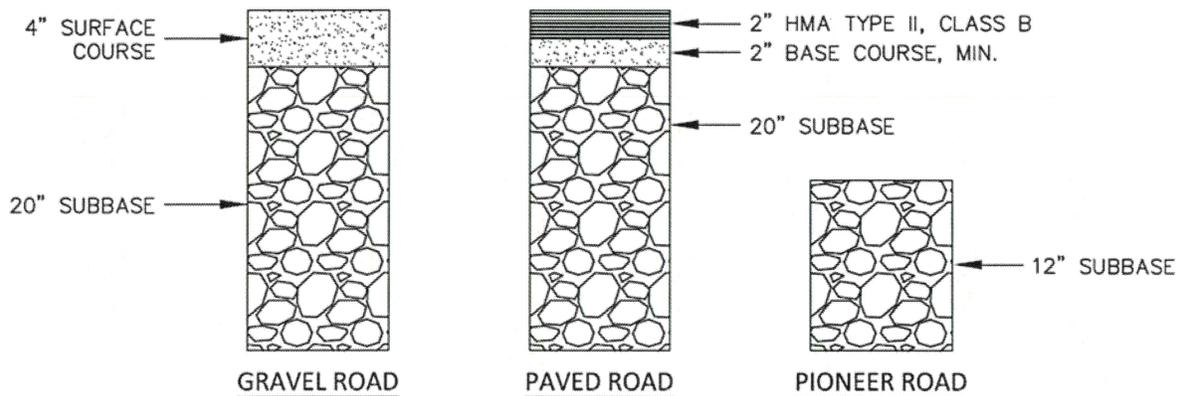


Figure C-1: Structural Sections

Section D. Drainage

D01 General

The purpose of this section is to ensure that stormwater management is provided with land development activities. Responsible stormwater management is the treatment, retention, detention, infiltration, and conveyance of stormwater and other surface waters without adversely impacting adjoining, nearby, or downstream properties and receiving waters.

D02 Requirements

A preliminary drainage plan is required when road construction or disturbing land to create useable area for a subdivision is proposed. A drainage report is required for projects that include road construction, disturb 10,000 square feet of land or more, fill in wetlands, disturb land within 100 feet of the ordinary high water mark (OHWM) of a water body, disturb land within a mapped flood hazard area, or change the location, direction, quantity, or type of runoff leaving a site. See subsection D06 for specific requirements regarding fish passage culverts. It is the applicant's responsibility to comply with all other applicable federal, state, and local codes and regulations.

D02.1 Preliminary Drainage Plan

Submit a preliminary drainage plan, prepared by an engineer or other qualified professional registered in the State of Alaska, with the preliminary plat or ROW construction permit application. The preliminary drainage plan shall show the project site at a legible scale plottable on 11" by 17" paper or larger and depict the following:

- (a) Existing and proposed property lines, plottable easements disclosed in the title report, the OHWM of water bodies with 100-foot upland offset, and existing mapped flood hazard areas.
- (b) Existing topography with horizontal and vertical accuracy meeting US National Map Accuracy standards, with 5-foot contour intervals if the ground slope is less than 10 percent and 10-foot contour intervals if the ground slope is greater than 10 percent.
- (c) Existing features that convey or retain drainage, including but not limited to: water bodies, wetlands, natural valleys, swales, ditches, check dams, culverts, and pipe systems.
- (d) Proposed drainage pattern and features, both constructed and natural, on site. Identify conveyance types, flow directions, and any drainage changes that may affect adjacent property.
- (e) Proposed stream crossings and anticipated culvert sizes. Identify fish-bearing streams.

D02.2 Drainage Report

- (a) Submit a drainage report, prepared by an engineer or other qualified professional registered in the State of Alaska, as part of the construction plan submittal in subsection F01.2. The drainage report shall include the following:
 - (b) The drainage plan as specified in D02.1 (may be shown on two plans for clarity), updated to include:
 - (1) Pre-development and post-development catchment area boundaries; and

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- (2) Locations of peak flow, peak velocity, and where runoff leaves the project site.
- (c) Description of methods, assumptions, and data sources used or made, including but not limited to:
 - (1) Rainfall data used (from NOAA's Precipitation Frequency Data Server or the Palmer Airport IDF curves in Figure D-1, whichever is more appropriate for the local conditions).
 - (2) Assumed post-development land cover conditions.
 - (3) Method used to determine runoff quantities, time of concentration, peak flows, etc.
- (d) Catchment area maps used or created to evaluate down-gradient conditions.
- (e) Identify design elements, with supporting runoff calculations, necessary to show compliance with the drainage design criteria set forth in D03.
- (f) Fish passage culvert plans, if applicable.

D03 Drainage Design Criteria

- (a) Design a drainage system for the project site to meet the criteria listed in Table D-1.
- (b) Retain natural drainage patterns to the extent possible.
- (c) Changes to drainage patterns must not adversely affect adjacent property or ROW.
- (d) Base the size and capacity of the drainage system on runoff volumes and flow rates assuming full development of the subdivision and a 10 percent increase to runoff from the catchment area.
- (e) Utility easements may be crossed by drainage features, but cannot be used to retain or detain water. Drainage easements are required where the ROW is not sufficient to accommodate drainage needs. See subsection E01.2.
- (f) Drainage to state or other municipal ROW are subject to their respective requirements and review.

Table D-1: Drainage Sizing and Analysis Criteria

Design Requirement	Purpose	Criteria
Conveyance Design	Size conveyances to pass design peak flows.	Drainage ditches: 10-year, 24-hour Non-regulated streams: 10-year, 24-hour Regulated streams: 100-year, 24-hour
Wetland Retention	Retain function of original wetlands	In areas where wetlands are disturbed, drainage must be designed to preserve the pre-development function of the remaining wetlands. For jurisdictional wetland areas, comply with United States Army Corps of Engineers wetlands development retention requirements.
Water Quality Protection	Treat first flush pollutant loading Ensure channel stability for all project conveyances	Treat the initial 0.25 inch of post-developed runoff for each storm event. Control flows in conveyance channels so that transport of particles sized D50 and greater will not occur for the post-development 10-year, 24-hour storm.
Extended Detention	Protect streams and channels from damage from smaller, more frequent storm flows	Provide 12 to 24 hours of detention for the post-development project runoff in excess of pre-development runoff volume for the 1-year, 24-hour storm.
Flood Hazard Protection	Control project peak flow to minimize downstream impacts	Maintain the post-development project runoff peak flow from the 10-year, 24-hour storm to less than 1.10 times pre-development runoff peak flow at all project discharge points. If post-development discharge is greater than pre-development discharge, evaluate down-gradient conditions for and mitigate adverse impacts for a distance of 1 mile downstream from the project as measured along the flow path or to the receiving water body, whichever is less,
Project Flood Bypass	Prevent an increased risk of flood damage from large storm events.	Design or identify an unobstructed, overland flow path for runoff to overtop or bypass project conveyance routes for the post-development 100-year, 24-hour storm.

D04 Drainage Ditches

Normal ditch depth shall be 30 inches and according to the typical section shown in subsection A06. The ditch depth may be reduced at local high points of the ditch, provided the flow line offset is maintained and with DPW concurrence. Alternate ditch design along Residential and Residential Subcollector streets may be considered, if evidence is provided that the following conditions exist:

- (a) Ditches are a minimum of 18" deep;
- (b) The design peak flow required by Table D-1 is demonstrated to be conveyed within ditches with a minimum freeboard of 12 inches;
- (c) Adequate drainage routes are provided and constructed within the ROW or designated drainage easements;
- (d) Flow lines are established at least 8 feet from the edge of roadway.
- (e) Ditches are deepened to provide cross drainage through 24" corrugated metal culverts (18" with DPW approval).
- (f) Cross sectional area of ditch is at least 15 square feet.

D05 Culverts

D05.1 General Culvert Design Criteria

The following criteria apply to all cross road culverts for runoff or seasonal drainage:

- (a) The minimum culvert slope is 0.5 percent.
- (b) Culverts longer than 100 feet require appropriate maintenance access and DPW approval
- (c) Cross road culverts shall have a minimum diameter of 18 inches.
- (d) Culverts shall be sized to convey the design peak flow required by Table D 1, based on the larger of the two computed sizes using inlet control and outlet control.
- (e) Culverts shall be corrugated metal pipe (CMP).
- (f) Install culverts in accordance with the manufacturer's recommendations for the anticipated traffic loads.

D05.2 Stream Crossing Culvert Criteria

The following criteria apply to all stream crossing culverts:

- (a) Prior to preliminary plat submittal, contact the Alaska Department of Fish and Game (ADFG), Division of Habitat to determine if a stream reach harbors fish. If so, stream crossing culverts shall be designed, constructed, and maintained according to D06.
- (b) Stream crossing culverts shall be placed as close to the pre-existing channel alignment as possible. Avoid placing culverts at pools and stream bends.
- (c) Road alignment shall be as close to perpendicular to the stream channel as possible.
- (d) Culvert slope shall be within 25 percent of the natural stream slope. For example, if the natural stream slope is 1.0 percent, the minimum design slope of the culvert would be 0.75 percent and the maximum design slope would be 1.25 percent.

- (e) Culvert outlet and inlet protection shall be used as necessary to reduce the risk of scour and perching.
- (f) Stream crossings shall be composed of a single pipe or arch for the main stream channel.
- (g) Overflow culverts may be used but should be placed at a higher elevation so that flows up to the OHWM pass through the primary culvert.
- (h) Stream crossings shall maintain the connectivity of wetlands adjacent to stream channels and shall accommodate sheet flow within such wetlands.
- (i) Stream crossing culverts shall not interfere with the functioning of floodplains and shall be designed to convey the design peak flow required by Table D-1. If the stream crossing culvert is not designed to accommodate the 100-year flow, a route must be established to safely convey flows exceeding the design peak flow without causing damage to property, endangering human life or public health, or causing significant environmental damage.
- (j) In cases of crossings within high entrenchment ratio environments, the ratio of the flood prone width to the OHWM width is greater than 2.2, floodplain overflow culverts may be beneficial to floodplain connectivity and can be used to pass the design flow. Minimum width requirements for the primary culvert still apply.
- (k) Stream crossing culverts shall have a minimum diameter of three feet.
- (l) Stream crossing culvert pipes and arches shall be metal.
- (m) Culverts longer than 100 feet require appropriate maintenance access and DPW approval
- (n) Install culverts in accordance with the manufacturer’s recommendations for the anticipated traffic loads.

D06 Fish Passage Culverts

These criteria provide general design guidance for road crossings of fish-bearing streams to maintain the full hydrologic functioning of the water body they are crossing. Site-specific conditions, such as multi-thread channels, may require alternate design approaches.

D06.1 Pre-design Conference

Schedule a fish passage pre-design conference with DPW prior to permit submittals. The pre-design conference is to:

- (a) determine required permits;
- (b) coordinate interagency requirements;
- (c) determine any site-specific design requirements; and
- (d) establish a plan review process.

D06.2 Stream Simulation Method

Stream simulation methodologies shall be used for the design of all fish-bearing stream crossings. The stream simulation method uses reference data from a representative section, or reference reach, of the specific water body crossed. This method attempts to replicate the natural stream channel conditions found upstream and downstream of the crossing. Sediment transport, flood and debris conveyance, and fish passage are designed to function as they do in the natural channel.

Reference Reach

- (a) Select a reference reach on the water body being crossed that is outside any anthropogenic influence, such as an existing culvert. In most cases of new crossings, the reference reach can be at the crossing location.
- (b) The length of the reference reach should be a minimum of 20 times the reference bankfull width and no less than 200 feet.
- (c) If there is not a suitable reference reach on the water body being crossed, a reference reach may be chosen from another water body with similar geomorphic and hydrologic characteristics. The reference reach characteristics should meet the following criteria in comparison to the water body being crossed:
 - (1) The reference reach bankfull width should be at least one half and no more than two times that of the water body being crossed;
 - (2) The reference reach bankfull discharge should be at least one half and no more than one and one half times the bankfull discharge of the water body being crossed; and
 - (3) The stream order of the reference reach should be within one stream order of the water body being crossed.
- (d) For a reference reach from another water body, the geomorphic characteristics of the crossing shall be scaled using ratios of the bankfull conditions.
- (e) The reference reach bankfull dimensions should be determined in the field by surveying a detailed cross section at the upper 1/3 of a representative riffle.
- (f) Reference data shall include, at a minimum:
 - (1) channel width at the OHWM,
 - (2) bankfull width,
 - (3) bankfull cross-sectional area,
 - (4) bankfull slope based on the longitudinal profile,
 - (5) substrate, and
 - (6) potential for floating debris.

Culvert Size, Slope, and Substrate

In addition to D05.2, the following criteria apply to fish passage culverts:

- (a) Under normal flow conditions, the channel within or under the fish passage culvert shall not differ from the reference reach condition in regards to the channel width at the OHWM, cross-sectional area, slope, substrate, and ability to pass floating debris.
- (b) The width of fish passage culverts shall not be less than the greater of 1.2 times the channel width at the OHWM and 1.0 times the bankfull width.
- (c) Fish passage culverts shall have a minimum diameter of five feet.
- (d) The use of smooth wall culverts is prohibited.
- (e) The use of trash racks or debris interceptors is prohibited
- (f) Round culvert pipes shall have a minimum invert burial depth of 40 percent of the culvert diameter into the substrate. Arch or box culverts shall have a minimum invert burial depth of 20

percent of the culvert’s rise into the substrate, unless scour analysis shows less fill is acceptable. The minimum invert burial depth is 1 foot.

- (g) The gradation of the substrate material within a fish passage culvert shall be designed to be a dense, well-graded mixture with adequate fines to ensure that the majority of the stream flows on the surface and the minimum water depth is maintained.
- (h) Substrate material within or under the fish passage culvert shall remain dynamically stable at all flood discharges up to and including a 50-year flood. Dynamic stability means that substrate material mobilized at higher flows will be replaced by bed material from the natural channel upstream of the crossing. For crossings without an adequate upstream sediment supply, the substrate material within the crossing shall be designed to resist the predicted critical shear forces up to the 100-year flood. For culverts with a slope of 6 percent or greater, substrate retention sills may be required to allow the bed load to continuously recruit within the culvert.
- (i) Substrate material within or under the fish passage culvert shall incorporate a low flow channel. The low flow channel should mimic the reference reach where possible. If the low flow channel dimensions are not discernable from the reference reach, the low flow channel should have a cross sectional area of 15 to 30 percent of the bankfull cross sectional area and a minimum depth of 4 inches for juvenile fish and 12 inches for adult fish. The low flow channel should be defined by rock features that will resist critical shear forces up to the 100-year flood.
- (j) Constructed streambanks are recommended inside fish passage culverts to protect the culvert from abrasion, provide resting areas for fish, and provide for small mammal crossing. If streambanks are constructed through a crossing, the streambanks shall be constructed of rock substrate designed to be stable at the 100-year flood. The streambank width should be a minimum of 1.5 times the maximum sieve size of the streambed material (D100). The crossing width shall be increased to allow for the channel width plus the streambanks.
- (k) If substrate retention sills are used, they shall have a maximum weir height of one half of the culvert invert burial depth. Substrate retention sills shall be spaced so that the maximum drop between weirs is 4 inches. The use of sills without substrate is not allowed.
- (l) Other state and federal requirements may apply.

D06.3 Hydraulic Method

Hydraulically designed culverts are discouraged for fish-bearing stream crossings, though may be approved by DPW and ADFG in circumstances where stream simulation is not practical. In addition to D05.2, the following criteria apply to hydraulically designed culverts:

- (a) The hydraulic method uses the swimming capability and migration timing of target design species and sizes of fish to create favorable hydraulic conditions throughout the culvert crossing. Information and design software for this methodology is available from ADFG, Division of Sport Fisheries (Fishpass) and the US Forest Service (FishXing).
- (b) The design fish shall be a 55-milimeter (2.16-inch) juvenile coho salmon for anadromous streams and a 55-milimeter (2.16-inch) Dolly Varden char for non-anadromous streams. These criteria may change based on ongoing research by federal and state agencies.

- (c) Fish passage high flow design discharge will not exceed the 5 percent annual exceedance flow or 0.4 times the 2-year peak flow, whichever is lower and has the most supporting hydrologic data.
- (d) Fish passage low-flow design discharge shall ensure a minimum 6-inch water depth or natural low flow and depth within the reach the crossing occurs. In cases where local conditions preclude natural low flow characteristics, backwatering or in-culvert structures should be considered.
- (e) In cases where flared end sections with aprons are necessary and fish passage is required, water depths and velocities that satisfy fish passage criteria must be demonstrated across the apron in addition to within the culvert.
- (f) Fish passage criteria for culverts crossing tidally-influenced streams must be satisfied 90 percent of the time. Tidally-influenced streams may sometimes be impassable due to insufficient depth at low flow and low tide. If the tidal area immediately downstream of a culvert is impassable for fish at low tide, the exceedance criterion shall apply only to the time during which fish can swim to the culvert.
- (g) Other state and federal requirements may apply.

D07 Rainfall Data

D07.1 Rainfall Distribution

The following IDF curves and hyetograph, derived from data measured at the Palmer airport, may be used for runoff calculations.

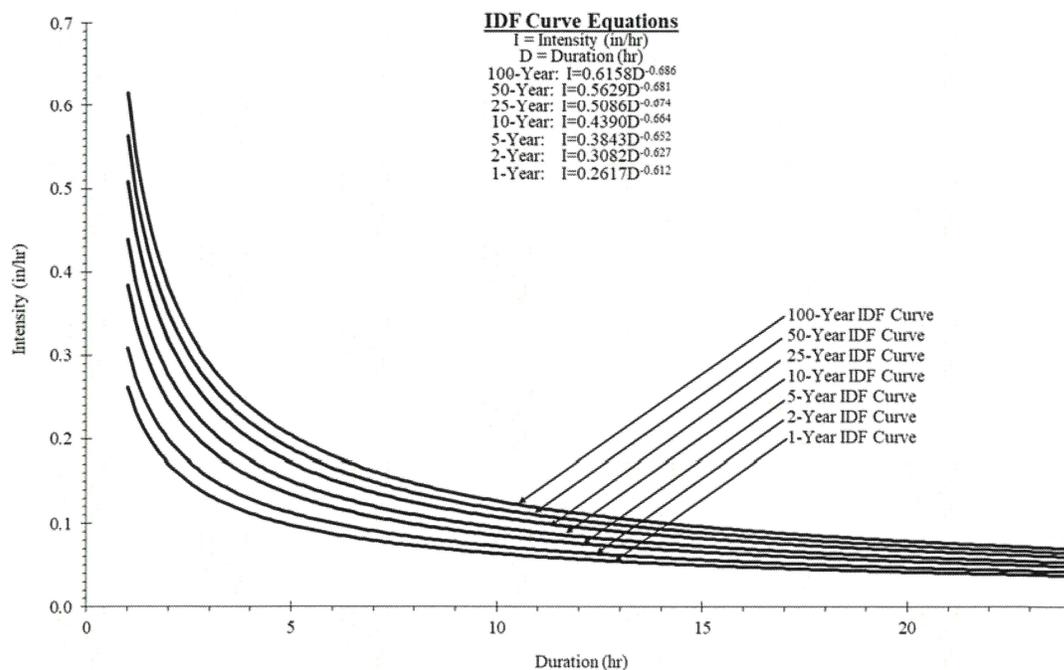


Figure D-1: Intensity-Duration-Frequency Relationships for the Matanuska-Susitna Borough
 Source: Palmer Municipal Airport, 1999 to 2008, Stantec – 2009

Table D-2: Recurrence Interval Hyetographs (in/hr) for the Matanuska-Susitna Borough

Time (hr)	1 Year	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
1	0.01	0.02	0.02	0.02	0.02	0.02	0.02
2	0.02	0.02	0.02	0.02	0.02	0.02	0.02
3	0.02	0.02	0.02	0.02	0.02	0.02	0.03
4	0.02	0.02	0.02	0.02	0.02	0.03	0.03
5	0.02	0.02	0.02	0.02	0.03	0.03	0.03
6	0.02	0.02	0.02	0.03	0.03	0.03	0.03
7	0.02	0.02	0.03	0.03	0.03	0.03	0.04
8	0.03	0.03	0.03	0.03	0.04	0.04	0.04
9	0.03	0.03	0.04	0.04	0.04	0.05	0.05
10	0.04	0.04	0.04	0.05	0.05	0.06	0.06
11	0.05	0.05	0.06	0.06	0.07	0.08	0.08
12	0.06	0.07	0.07	0.08	0.09	0.10	0.10
13	0.26	0.31	0.38	0.44	0.51	0.56	0.62
14	0.08	0.09	0.10	0.12	0.13	0.14	0.15
15	0.04	0.04	0.05	0.05	0.06	0.06	0.07
16	0.03	0.04	0.04	0.04	0.05	0.05	0.05
17	0.03	0.03	0.03	0.04	0.04	0.04	0.04
18	0.02	0.03	0.03	0.03	0.03	0.04	0.04
19	0.02	0.02	0.03	0.03	0.03	0.03	0.03
20	0.02	0.02	0.02	0.02	0.03	0.03	0.03
21	0.02	0.02	0.02	0.02	0.03	0.03	0.03
22	0.02	0.02	0.02	0.02	0.02	0.02	0.03
23	0.02	0.02	0.02	0.02	0.02	0.02	0.02
24	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Total	0.90	1.01	1.16	1.28	1.43	1.55	1.67

Note: Total values of rainfall calculated by adding un-rounded average rainfall intensities for each time step.

Source: Palmer Municipal Airport, 1999 to 2008, Stantec – 2009

Section E. Easements

E01 General

E01.1 Common Access Easements

When a shared driveway is required for two or more lots, a common access easement shall be dedicated for the exclusive use of the subject lots, unless otherwise accommodated. The MSB is the permitting authority within common access easements. The common access easement shall be sized to reasonably accommodate separation of the shared driveway to the individual lots.

E01.2 Drainage Easements

Drainage easements are required where the ROW is not sufficient to accommodate drainage needs. Drainage easements can overlap with other platted easements and shall begin or terminate at the ROW. Drainage easements shall be a minimum width of 20 feet, and a minimum average length of 20 feet outside of any overlapping easements or of sufficient size and area shown to facilitate construction and maintenance.

E01.3 Slope Easements

Slope easements are required to contain all cut and fill slopes steeper than 2.5:1 that extend outside of the ROW, plus at least 5 feet outside the cut or fill catches.

E01.4 Sight Distance Maintenance Easements

Sight distance maintenance easements are required where intersection sight triangles extend outside of the ROW.

E01.5 Snow Storage Easements

Snow storage easements are required where the ROW is not sufficient to accommodate anticipated snow removal needs. Snow storage easements shall be located where the storage of snow would not impede sight distance.

E01.6 Utility Easements

Unless lots are otherwise served by alternate utility easements or agreements, at least one 15-foot utility easement adjacent to the ROW is required to allow for utility installation and maintenance. Additional utility easements may be required as deemed reasonably necessary by utility companies to serve the subdivision or protect existing facilities. The applicant is responsible for satisfying any conflicts that may occur in the request for easements from any utility company during the platting process.

Platted utility easements are to be clear of wells, septic systems, structures, or encroachments, as defined by MSB or other applicable code; unless the applicant has obtained an encroachment permit from the MSB and a "Non-Objection to Easement Encroachment" from each utility.

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Utility easements are to be fully useable for utility installation where installation equipment can safely work. Whenever possible, utility easements should not be placed in swamps, steep slopes, or other unusable areas.

Section F. Development Implementation

F01 General

This section describes the procedure that is to be followed before constructing any improvements required for recording a subdivision plat. The applicant's engineer shall be the primary point of contact throughout this process.

It is the applicant's responsibility to determine, acquire, and follow permits required by other agencies. Approval from MSB does not supersede other agencies' permit requirements.

F01.1 Preliminary Plat Submittal

The preliminary plat submittal is to be accompanied by:

- (a) ADT calculations per A15;
- (b) Preliminary drainage plan per D02.1;
- (c) Road plan and profile for sections of road where proposed grades exceed 6 percent where cuts and fills exceed 5 feet in height measured from the centerline, or where slope easements will be required, and cross sections at the maximum cut and fill sections. Road plan and profile shall include the vertical curves or grade breaks on either side of the subject sections;
- (d) Road plan, profile, and cross-sections if required by B03.3; and
- (e) Intersection sight distance evaluation, if requested, according to A09.1.

F01.2 Construction Plans

Submit construction plans to DPW at least seven calendar days before the preconstruction conference. All plan drawing submittals shall be at a scale of 1 inch = 50 feet or more detailed, plottable on 11" by 17" paper. Construction plans shall include the following:

- (a) Drainage Report, according to D02.2;
- (b) Plan & Profile of proposed roads (if required by F01.1);
 - (1) Existing topography with horizontal and vertical accuracy meeting US National Map Accuracy standards, two-foot contour intervals within the proposed road corridors.
- (c) Asbuilt survey of visible improvements and above ground utilities within and adjacent to the subdivision;
- (d) Copy of agency accepted permit applications required for the improvements prior to construction, including but not limited to ADOT&PF Approach Road Permit, DNR Section Line Easement authorization, MSB Flood Hazard Development permit, and USACE wetland fill permit; and
- (e) Plans for any proposed improvements within the ROW that are outside of the scope of this manual (e.g. retaining walls or guard rail) or do not conform to the standards set forth herein, conforming to ADOT&PF design criteria and standards.

F01.3 Preconstruction Conference

The preconstruction conference is for the purpose of reviewing and approving the Subdivision Construction Plan for the required improvements. The engineer may request scheduling of a preconstruction conference with DPW after the preliminary plat has been approved by the Platting Board, the Notification of Action (NOA) has been received, and the construction plans have been submitted. Scheduling of preconstruction conference requests may be delayed during the month of October. The applicant, or designated representative, and the engineer must attend the preconstruction conference. In addition to the construction plans, the following items will be provided at or prior to the preconstruction conference:

- (a) Cost estimate of required improvements for the determination of the inspection fee according to the most recently adopted Schedule of Rates and Fees;
- (b) Proof of compliance with the Alaska Pollutant Discharge Elimination System Program;
 - (1) Acceptable proof includes a Notice of Intent (NOI), a Low Erosivity Waiver (LEW), or a determination by a qualified person that neither is needed.
- (c) Rough plan and time line for construction;
- (d) Copy of any issued permits required for the improvements prior to construction;
- (e) Off-site material source and quantities; and
- (f) On-site clearing, grubbing, and topsoil disposal plan, location map.

The Subdivision Construction Plan must be signed by the applicant, or designated representative, and the engineer. Upon acceptance of the Subdivision Construction Plan by DPW and payment of the inspection fee, the Platting Division will issue a Notice to Proceed (NTP). See Appendix B for an example of the Subdivision Construction Plan.

Some construction plans or permit approvals may take longer to develop or obtain, such as fish passage culvert plans and associated permits. Those finalized plans and issued permits may be submitted later but must be received and reviewed by DPW before construction begins within the respective areas.

F01.4 Interim Inspections

The applicant's engineer shall supervise all phases of construction. Notify DPW of changes to the Subdivision Construction Plan, such as adding or deleting a cross culvert, changes in culvert size, adding or deleting a drainage facility, grade changes of more than 1 percent or that would result in grades of over 6 percent or cuts or fills of over 5 feet in height measured from the centerline, or changes to foreslopes or backslopes. The changes should be approved by DPW prior to completion of construction. Periodic interim inspections may be conducted by DPW. Interim inspections may be requested by the engineer.

F01.5 Pre-Final Inspection

When the engineer has determined that construction of the improvements will be substantially complete according to the Subdivision Construction Plan, the engineer will request a Pre-Final Inspection. The Pre-Final Inspection request must be received by September 30th and shall include a

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description of work yet to be completed. The Pre-Final Inspection will be scheduled to occur within 14 calendar days of the request and shall be attended by the engineer and DPW. A punch list will be developed, if any work items remain, at the Pre-Final Inspection.

F01.6 Final Inspection

When construction of the improvements and punch list items are complete according to the Subdivision Construction Plan, the engineer will request a Final Inspection of the improvements. The Final Inspection request must be received by October 15th. Final Inspections will cease October 31st, or when winter conditions prohibit inspection, whichever comes first. The Final Inspection will be scheduled to occur within 14 calendar days of the request and shall be attended by the engineer and DPW.

F01.7 Final Report

Upon DPW approval of the Final Inspection, the engineer shall submit a written Final Report to the Platting Division. The Final Report shall include:

- (a) Stamped and signed narrative describing at a minimum:
 - (1) road construction process and equipment used,
 - (2) material source and disposal areas,
 - (3) road embankment and subbase used,
 - (4) road topping or pavement used,
 - (5) compactive effort,
 - (6) road dimensions and shaping (length, roadway width, material thicknesses, pavement width, crown, cul-de-sac or t-turnaround dimensions and slope, foreslope, backslope, maximum centerline grade, etc.) for each road constructed,
 - (7) drainage, ditch depth, location of drainage easements, and
 - (8) road standard certification (Pioneer Road, Residential Street, etc.) for each road constructed;
- (b) Stamped and signed final drainage plan, (minimum 11"x17");
- (c) As-built drawing showing the horizontal locations of borrow extraction along the road corridor;
- (d) Compaction test reports;
- (e) Gradation tests, if required; and
- (f) Photos of each stage of construction.

DPW will review the report and provide comments, if necessary, within 14 calendar days.

F01.8 Construction Acceptance

Upon approval of the Final Report, DPW will issue a Certificate of Construction Acceptance.

F01.9 Warranty

All improvements are to be guaranteed until October 31st of the calendar year following issuance of the Certificate of Construction Acceptance. Roads within a Road Service Area may be accepted for

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maintenance at the end of the warranty. Pioneer Roads are not eligible for maintenance. Maintenance of Mountain Access Roads is at the discretion of DPW.

During the warranty period, the applicant is responsible for any road maintenance including, but not limited to: snow removal, maintaining a smooth road surface and crown, maintaining stabilized foreslopes and backslopes, and maintaining positive drainage. If any deficiencies arise during the warranty, DPW will issue a punch list to the applicant by September 1st to allow time for completion of repairs. The applicant must notify DPW of completion of repairs by October 15th for the roads to be eligible for maintenance on November 1st.

The warranty period for improvements following completion of a subdivision agreement may be lessened to one calendar year. The applicant shall request a punch list from DPW no more than one month before the end of the one-year warranty.

If the subdivision plat has not recorded within 6 months of the date of the Certificate of Construction Acceptance or if warranty repairs are not completed by October 15th, the warranty will be extended an additional year and the warranty process will be repeated.

Maintenance may be denied and the Certificate of Construction Acceptance revoked if deficiencies are not corrected to the satisfaction of DPW. A notice may be recorded indicating to the public that the MSB is not responsible for road upkeep and maintenance until such a time that the deficiencies are corrected.

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Section G. Commercial and Industrial Subdivisions

G01 General

Commercial and Industrial subdivisions shall be designed using trip generation rates from the Institute of Transportation Engineers (ITE) Trip Generation Manual, and to meet the standards of AASHTO, International Fire Code (IFC), and any other applicable standards or code.

Section H. Utilities

H01 General

These standards apply to the design and construction of utility facilities within the MSB. All utility installation within existing or proposed ROW or utility easements must comply with the provisions of MSB or other applicable code, or as otherwise approved by the permitting authority.

H02 Utility Location Guidelines

H02.1 Underground Utility Facilities:

- (a) The location of utility facilities placed within the ROW shall be coordinated with the permitting authority.
- (b) Backslopes or foreslopes which extend into a utility easement should not exceed 4:1. These limits are necessary for construction equipment for utility installation.
- (c) Utility facilities paralleling the road shall not be located within 10 feet of the roadway, unless otherwise approved by the permitting authority.
- (d) Underground road crossings shall be buried a minimum of 48 inches below finished grade. Backfill shall be compacted according to the requirements of Section C, or as otherwise approved by the permitting authority.
- (e) Conduit road crossings, if used, shall be installed in accordance with each utility company's standards and applicable code.
- (f) Standard burial depth of longitudinal utilities is 36 inches below grade. The applicant should delineate areas, such as where driveways and drainage easements are planned, where deeper burial may be needed.

H02.2 Above Ground Utility Facilities:

- (a) Above ground pedestals, poles, and utility facilities shall not be located within 10 feet of the roadway, unless an alternate design meets clear zone requirements.
- (b) Above ground pedestals, poles, and utility facilities shall not be located within intersection sight triangles.
- (c) Unless otherwise authorized by the permitting authority, above ground pedestals, poles, and utility facilities shall not be located within the ROW nearer than 40 feet from the point of intersection of the extension of the property lines at any existing or proposed intersection on Residential Collector streets or higher classification.
- (d) Above ground pedestals, poles, and utility facilities shall not be located within a common access easement or drainage easement, within 20 feet of a common access point, or within 10 feet of a roadway cross culvert.
- (e) Permanent 5-foot high snow marker poles, grey with white retroreflective sheeting or yellow, shall be installed on all pedestals and vaults.
- (f) All guy wires installed within the ROW or utility easements adjacent to, or near to a roadway shall have a minimum 8-foot long yellow delineator installed above the anchor.

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- (g) Pedestals located within the ROW shall be located within the outer 1 foot of the ROW.

H02.3 Separation of Utilities:

- (a) Recommend 5-foot horizontal separation between power poles and buried utilities.
- (b) Recommend minimum 1-foot physical separation between all underground utilities.
- (c) Separation of storm, sewer, and water utilities shall meet the requirements of the Alaska Department of Environmental Conservation.

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Appendix A

MSB Special Provision to the ADOT&PF Standard Specifications for Highway Construction

SECTION 401**HOT MIX ASPHALT PAVEMENT**

Special Provision

Replace Section 401 with the following:

401-1.01 DESCRIPTION. Construct one or more courses of plant-produced Hot Mix Asphalt (HMA) pavement on an approved surface, to the lines, grades, and depths described in the scope of work and shown on the maps at each location.

MATERIALS

401-2.01 ASPHALT BINDER. Conform to Subsection 702-2.01. If binder performance grade is not specified, use PG 52-28. Asphalt binder may be conditionally accepted at the source if a manufacturer's certification of compliance is provided, according to Subsection 106-1.05, and the applicable requirements of Section 702 are met.

401-2.02 LIQUID ANTI-STRIP ADDITIVE. Use anti-strip agents in the proportions determined by ATM 414 and included in the approved Job Mix Design (JMD). At least 70 percent of the aggregate must remain coated when tested according to ATM 414. A minimum of 0.30 percent by weight of asphalt binder is required.

401-2.03 JOINT ADHESIVE. Conform to Subsection 702-2.05.

401-2.04 JOINT SEALANT. Conform to Subsection 702-2.06.

401-2.05 WARM MIX ASPHALT. Conform to Subsection 702-2.07.

401-2.06 ASPHALT RELEASE AGENT. Conform to Subsection 702-2.08.

401-2.07 AGGREGATES. Conform to Subsection 703-2.04. Use a minimum of three stockpiles of crushed aggregate (coarse, intermediate, and fine). Place blend material, if any, in a fourth pile.

401-2.08 RECYCLED ASPHALT PAVEMENT. Recycled asphalt pavement (RAP) may be used in the production of HMA. The RAP may be from pavements removed under the Contract, or from an existing stockpile. Conform to Subsection 703-2.16

401-2.09 JOB MIX DESIGN. Provide target values for gradation that satisfy both the broad band gradation limits shown in Table 703-4 and the requirements of Table 401-1, for Type II, Class B HMA.

TABLE 401-1

HMA MARSHALL DESIGN REQUIREMENTS

DESIGN PARAMETER	CLASS "B"
HMA (including Asphalt Binder)	
Stability, Pounds	1200 Min
Flow, 0.01 Inch	8 – 16
Voids in Total Mix (VTM), %	3.0 – 5.0
Compaction, Number of Blows Each Side of Test Specimen	50
Asphalt Binder	
Voids Filled with Asphalt (VFA), %	65 – 78
Asphalt Content, Min %	5.0
Dust-Asphalt Ratio*	0.6 – 1.4
Voids in Mineral Aggregate (VMA), %, Min	12.0
Liquid Anti-Strip Additive**, %, Min	0.30
RAP, %, Max	25.0

*Dust-Asphalt ratio is the percent of material passing the No. 200 sieve divided by the percent of effective asphalt binder (calculated by weight).

**By Weight of Asphalt Binder

The Contractor shall provide a JMD following the requirements specified in this section. Submit the JMD to the Engineer at least two working days prior to the pre-paving meeting. Submit samples to the Engineer upon request for JMD verification testing.

All Contractor-furnished JMDs must be sealed by a Professional Engineer registered in the State of Alaska. The Professional Engineer shall certify that the JMD was performed according to the specified procedures, and meets all project specifications.

Changes in the source of asphalt binder, source of aggregates, aggregate quality, aggregate gradation, or blend ratio shall dictate that the Contractor submit a new JMD for approval.

CONSTRUCTION REQUIREMENTS

401-3.01 PRE-PAVING MEETING. Meet with the Engineer for a pre-paving meeting in the presence of project superintendent and paving supervisor at least five (5) working days before beginning paving operations. Submit a paving plan and pavement inspection plan at the meeting. When directed by the Engineer, make adjustments to the plan and resubmit.

Include the following elements in the paving plan and address these elements at the meeting:

- a. Sequence of operations
- b. List of equipment that will be used for production, transport, pick-up (if applicable), laydown, and compaction
- c. Procedures to produce consistent HMA
- d. Procedures to minimize material and thermal segregation

- e. Procedures to minimize premature cooling
- f. Procedures to achieve HMA density
- g. Procedures for joint construction including corrective action for joints that do not meet surface tolerance requirements
- h. Quality control testing methods, frequencies, and sample locations for gradation, asphalt binder content, and density, and
- i. Any other information or procedures necessary to provide completed HMA construction that meets the contract requirements.

Include the following elements in the pavement inspection plan and address these elements at the meeting:

- a. Process for daily inspection, and
- b. Means and methods to remove and dispose of project materials.

401-3.02 CONTRACTOR QUALITY CONTROL. Perform quality control (QC) of HMA materials in accordance with Subsection 106-1.03. The Contractor shall employ a qualified person or company to perform process control testing.

401-3.03 WEATHER LIMITATIONS. Place HMA on a stable and non-yielding roadbed. Do not place HMA when the base material is wet or frozen, or when weather conditions prevent proper handling or finishing of the mix. Do not place HMA leveling course when the roadway surface temperature is colder than 40° F.

401-3.04 EQUIPMENT, GENERAL. Use equipment in good working order and free of HMA buildup. Make all equipment available for inspection and demonstration of operation a minimum of 24 hours before placement of HMA and test strip HMA.

401-3.05 ASPHALT MIXING PLANT. Meet AASHTO M 156. Use an HMA plant capable of producing at least 100 tons of HMA per hour noted on posted DEC air quality permit, designed to dry aggregates, maintain consistent and accurate temperature control, and accurately proportion asphalt binder and aggregates. Calibrate the HMA plant and furnish copies of the calibration data to the Engineer at least 24 hours before HMA production.

Provide a scalping screen at the asphalt plant to prevent oversize material or debris from being incorporated into the HMA.

Provide a tap on the asphalt binder supply line just before it enters the plant (after the 3-way valve) for sampling asphalt binder. Provide aggregate and asphalt binder sampling locations meeting OSHA safety requirements.

Belt conveyor scales may be used to proportion plant blends and mixtures if the scales meet the general requirements for weighing equipment and are calibrated according to the manufacturer’s instructions.

401-3.06 HAULING EQUIPMENT. Haul HMA in trucks with tight, clean, smooth metal beds. Keep beds free of petroleum oils, solvents, or other materials that would adversely affect the mixture. Apply a thin coat of approved asphalt release agent to beds as necessary to prevent mixture adherence. Provide

trucks with covers attached and available for use. When directed by the Engineer, cover the HMA in the hauling vehicle(s).

Do not haul HMA on barges.

401-3.07 ASPHALT PAVERS. Use self-propelled asphalt pavers with heated vibratory screed assemblies to spread and finish HMA to the specified section widths and thicknesses without introducing thermal or material segregation.

Equip the paver with a receiving hopper having sufficient capacity for a uniform spreading operation and a distribution system to place the HMA uniformly in front of screed. Use a screed assembly that produces a finished surface of the required smoothness, thickness, and texture without tearing, shoving, or displacing the HMA. Heat and vibrate screed extensions. Place auger extensions within 20 inches of the screed extensions or per written manufacturer's recommendations.

Equip the paver with a means of preventing segregation of the coarse aggregate particles from the remainder of the HMA when carried from the paver hopper back to the augers.

The use of a "Layton Box" or equivalent towed paver is allowed on bike paths, sidewalks, and driveways.

401-3.08 ROLLERS. Use both steel-wheel (static or vibratory) and pneumatic-tire rollers. Use rollers designed to compact HMA and capable of reversing without shoving or tearing the mixture. Select rollers that will not crush the aggregate or displace the HMA. Equip vibratory rollers with separate vibration and propulsion controls.

Equip the rollers with an infrared thermometer that measures and displays the surface temperature to the operator. Infrared thermometer may be hand-held or fixed to the roller.

Utilize a pneumatic roller in the complement of rollers to compact the leveling course. Use fully skirted pneumatic-tire roller having a minimum operating weight of 3000 pounds per tire.

401-3.09 RESERVED.

401-3.10 PREPARATION OF EXISTING SURFACE. Prepare existing surfaces according to the Contract. Prior to placing HMA, clean existing surfaces of loose material and uniformly coat contact surfaces of curbing, gutters, manholes and other structures with tack coat material meeting Section 402. Treat cold joint surfaces according to 401-3.17. Allow tack coat to break before placement of HMA on these surfaces.

Cut existing pavement, as designated by the Engineer, in a neat line with a power driven saw to provide a clean, straight joint. A thin tack coat of asphalt binder shall be sprayed on all cold joints prior to placing any fresh HMA against the joint. Cutting and removing the asphalt and tack coat is subsidiary to 401(1) item.

Before applying tack coat to an existing paved surface, clean and patch the surface. Remove irregularities to provide a reasonably smooth and uniform surface. Remove and replace unstable areas with HMA. Clean the edges of existing pavements, which are to be adjacent to new pavement, to permit

the adhesion of asphalt materials. Clean loose material from cracks. Fill the cleaned cracks, wider than 1 inch, with HMA tamped in place. Wash, sweep, or wash and sweep the paved surface clean and free of loose materials.

Preparation of a milled surface:

1. Prelevel remaining ruts, pavement delaminations, and depressions having a depth greater than 1/2 inch with an approved HMA.
2. Notify the Engineer of pavement areas that appear thin or unstable. Where milling operation creates thin or unstable pavement areas, or where it breaks through existing pavement, remove thin and unstable pavement, and 2 inches of existing base material, compact and replace with an approved HMA.

401-3.11 PREPARATION OF ASPHALT. Provide a continuous supply of asphalt binder to the asphalt mixing plant at a uniform temperature, within the recommended mixing temperature range.

401-3.12 PREPARATION OF AGGREGATES. Dry the aggregate so the moisture content of the HMA, sampled at the point of acceptance for asphalt binder content, does not exceed 0.5 percent (by total weight of mix), as determined by ATM 407.

Heat the aggregate for the HMA to a temperature compatible with the mix requirements specified.

Adjust the burner on the dryer to avoid damage to the aggregate and to prevent the presence of unburned fuel on the aggregate. HMA containing soot or fuel is unacceptable per Subsection 105-1.11.

401-3.13 MIXING. Combine the aggregate, asphalt binder, and additives in the mixer in the amounts required by the JMD. Mix to obtain at least 98 percent coated particles when tested according to AASHTO T195.

For batch plants, put the dry aggregate in motion before addition of asphalt binder.

Mix the HMA within the temperature range determined by the JMD.

Upon the Engineer's request, provide daily burner charts showing start and stop times and temperatures.

401-3.14 TEMPORARY STORAGE OF HMA. Silo type storage bins may be used, provided the characteristics of the HMA remain unaltered.

Signs of visible segregation, heat loss, changes from the JMD, change in the characteristics of asphalt binder, lumpiness, and stiffness of the mixture, are causes for rejection.

Do not store HMA on barges.

401-3.15 PLACING AND SPREADING. Use asphalt pavers to distribute HMA, including leveling course and temporary HMA. Place the HMA upon the approved surface, spread, strike off, and adjust surface irregularities. The maximum compacted lift thickness allowed is 3 inches.

When multiple lifts are specified in the Contract, do not place the final lift until all lower lifts throughout that section, are placed and accepted.

Do not place HMA abutting curb and gutter until curb and gutter are installed, except as approved by the Engineer.

Do not pave against new Portland cement concrete curbing until it has cured for at least 72 hours.

When practicable, adjust elevation of metal fixtures before paving the final lift, so they will be between 1/4 and 1/2 inch below the top surface of the final lift. Metal fixtures include, but are not limited to manholes, valve boxes, monument cases, hand holes, and drains.

When the section of roadway being paved is open to traffic, pave adjacent traffic lanes to the same elevation within 24 hours. Place approved material against the outside pavement edge when the drop off exceeds 2 inches.

Use hand tools to spread, rake, and lute the HMA in areas where irregularities or unavoidable obstacles make mechanical spreading and finishing equipment impracticable.

Place HMA over bridge deck membranes according to Section 508 and the membrane manufacturer's recommendations.

Do not mix HMA produced from different plants for testing or paving.

401-3.16 COMPACTION. Thoroughly and uniformly, compact the HMA by rolling. In areas not accessible to large rollers, compact with mechanical tampers or trench rollers. Compact HMA immediately after it is placed and spread, and as soon as it can be compacted without undue displacement, cracking or shoving. Perform initial breakdown compaction while the HMA surface mixture temperature is greater than 235° F and finish compaction before the surface temperature reaches 150° F.

Prevent indentation in the mat, do not leave rollers or other equipment standing on HMA that has not sufficiently cooled.

The Lower Specification Limit for density is 92.0 percent of the Maximum Specific Gravity (MSG) as determined by ATM 409. The MSG from the approved JMD is used for the first lot of each type of HMA. The MSG for additional lots is determined from the first subplot of each lot.

401-3.17 JOINTS. Place and compact the HMA to provide a continuous bond, texture, and smoothness between adjacent sections of the HMA.

Minimize the number of joints. Do not construct longitudinal joints in the driving lanes unless approved by the Engineer in writing at the pre-paving meeting. Offset the longitudinal joints in one layer from the joint in the layer immediately below by at least 6 inches. Align the joints of the top layer at the centerline or lane lines. Where preformed marking tape striping is required, offset the longitudinal joint in the top layer not more than 6 inches from the edge of the stripe.

Form transverse joints by saw-cutting back on the previous run to expose the full depth of the course or by using a removable bulkhead. Skew transverse joints 15 to 25 degrees.

For all joints below the top lift, uniformly coat joint surfaces with tack coat material meeting Section 402.

Uniformly coat the joint face of all top lift joints with a joint adhesive. Follow joint adhesive manufacturer's recommendations for temperatures and application method. Remove joint adhesive applied to the top of pavement surface. If infrared joint heaters are used and passing joint densities are achieved in each of the first three joint densities taken, then joint adhesive is not required.

The Lower Specification Limit for top lift longitudinal joint density is 91.0 percent of the MSG of the panel completing the joint. MSG will be determined according to ATM 409. Top lift longitudinal joints will be evaluated for acceptance according to Subsection 401-4.03.

For top lift panels that have a longitudinal joint density less than 91.0 percent of the MSG, seal the surface of the longitudinal joints with joint sealant. Apply joint sealant according to the manufacturer's recommendations while the HMA is clean, free of moisture and prior to final traffic marking. Place the sealant at a maximum application rate of 0.15 gallons per square yard, and at least 12 inches wide centered on the longitudinal joint. After surface sealing, inlay by grinding pavement striping into the sealed HMA. Use grooving equipment that grinds a dry cut to groove the width, length, and thickness of the striping within the specified striping tolerances.

Correct improperly formed joints that result in surface irregularities according to a corrective action plan.

Complete all hot lapped joints while the mat temperature is over 230° F as measured by the Engineer, within 3 inches of the joint. Tack coat and joint adhesive are not required for hot lapped joints.

401-3.18 SURFACE REQUIREMENTS AND TOLERANCE. The finished surface of all HMA paving must match dimensions shown in the Contract for horizontal alignment and width, profile grade and elevation, crown slope, and pavement thickness. Water must drain across the pavement surface without ponding. The surface must have a uniform texture, without ridges, puddles, humps, depressions, and roller marks. The surface must not exhibit raveling, cracking, tearing, asphalt bleeding, or aggregate segregation. Leave no foreign material, uncoated aggregate, or oversize aggregate on the HMA surface.

The Engineer will test the finished surface after final rolling at selected locations using a 10-foot straightedge. The Engineer will identify pavement areas that deviate more than 3/16 inch from the straightedge, including joints, as defective work. Perform corrective work by removing and replacing, grinding, cold milling or infrared heating such areas as required. Do not surface patch. After the Contractor performs corrective work, the Engineer will retest the area. Submit correction methods to the Engineer for approval before correction work commences.

Perform corrective actions according to one of the following or by a method approved by the Engineer:

1. Diamond Grinding. If the required pavement thickness is not decreased by more than 1/4 inch, grind to the required surface tolerance and cross section. Remove and dispose of all waste

materials. Apply joint sealant and sand to exposed aggregates per the manufacturer's recommendations.

2. **Overlaying.** Mill or sawcut the existing pavement to provide a vertical transverse joint face to match the overlay to the existing pavement. Apply tack coat on the milled surface and joint adhesive to all vertical joints and overlay the full width of the underlying pavement surface. Use the same approved HMA for overlays. Place a minimum overlay thickness of 2.0 inches.
3. **Mill and Fill.** Mill the existing pavement to provide a vertical transverse joint face. Apply tack coat to the milled surface and joint adhesive to all vertical joints prior to inlaying new HMA to match the existing pavement. Use the same approved HMA. Place a minimum thickness of 2.0 inches.

401-3.19 REPAIRING DEFECTIVE AREAS. Remove HMA that is contaminated with foreign material, is segregated (determined visually or by testing), flushing, or bleeding asphalt. Remove and dispose defective HMA for the full thickness of the course. Cut the pavement so that edges are vertical and the sides are parallel to the direction of traffic. Coat edges with a tack coat according to Section 402. Place and compact fresh HMA so that compaction, grade, and smoothness requirements are met.

401-3.20 ROADWAY MAINTENANCE. Inspect daily according to pavement inspection plan. Remove and dispose of project materials incorrectly deposited on existing and new pavement surfaces inside and outside the project area including haul routes.

The Contractor is responsible for damage caused by not removing these materials and any damage to the roadway from the removal method(s).

Repair damage to the existing roadway that results from fugitive materials or their removal.

401-3.21 TEMPERATURE REQUIREMENTS. The Engineer may reject HMA that is mixed, hauled, spread and placed, or compacted at a temperature outside the temperature range determined by either the JMD, by a control test strip, or by the Specifications. Rejected HMA is deemed unacceptable according to Subsection 105-1.11. The Engineer will determine whether the unacceptable HMA shall either be corrected, or removed and replaced.

At the Engineer's discretion, the Contractor may be allowed to compact HMA that is already placed and spread but is outside the temperature range. If the compacted HMA fails the Engineer's tests for acceptance, it must be removed and replaced according to Subsection 105-1.11.

401-3.22 SHOULDERS. After the paving is complete, if the Engineer determines that the shoulder is too narrow, additional gravel, D-1 material, or both shall be brought in to widen the shoulder. The pavement shall be washed, swept, or both immediately following shoulder work. The haul, placement, and sweeping will be subsidiary to 301(1) item.

All pavement edges shall be backed with base course (D-1), surface course (E-1), or processed material graded flush with the pavement surface. This work shall be accomplished as directed by the Engineer after it is determined that the new HMA has cured sufficiently to avoid damaging the edge. Cul-de-sacs and other areas where a grader cannot reach shall be backed by hand raking. The pavement shall be washed, swept, or both immediately following this work. This work will be subsidiary to 401(1) item.

401-4.01 METHOD OF MEASUREMENT. Section 109 and the following:

1. Hot Mix Asphalt. HMA will be measured by the ton in accordance with Section 109, Measurement and Payment. HMA quantities on the bid form include a 10% contingency. Contractor will be required to monitor depth (yield) and waste to not exceed the 10% contingency. Contractor will not be compensated over the HMA amount listed on the bid form unless work is added by a field directive and issued by the Engineer. Asphalt binder, tack coat, and anti-stripping additive will not be measured separately for payment, but are included in the HMA pay item.
2. Leveling Course. By Lane-Station (12-foot width) or by weight. Asphalt binder, tack coat, and anti-stripping additive will not be measured separately for payment, but are included in the Leveling Course pay item.

401-4.02 ACCEPTANCE SAMPLING AND TESTING. HMA will be accepted for payment based on the Engineer's approval of the JMD, and placement and compaction of the HMA to the specified depth, finished surface requirements and tolerances. The Engineer reserves the right to perform any testing required in order to determine acceptance.

Sampling and testing include the following:

1. Asphalt Binder Content. HMA samples shall be taken randomly by the Contractor in the presence of the Engineer from behind the paver screed before initial compaction, or will be taken randomly by the Engineer from the windrow, according to ATM 402 or ATM 403, at the discretion of the Engineer. The location (behind the paver screed or windrow) will be determined at the pre-paving meeting. Random sampling locations will be determined by the Engineer.

Two separate samples will be taken, one for acceptance testing and one held in reserve for retesting if requested. Asphalt binder content will be determined according to ATM 405 or ATM 406, at the discretion of the Engineer.

2. Aggregate Gradation. Aggregates tested for gradation acceptance will have the full tolerances from Table 401-2 applied.
 - a. Drum Mix Plants. Samples will be taken from the combined aggregate cold feed conveyor via a diverter device, from the stopped conveyor belt or from the same location as samples for determination of asphalt binder content, at the discretion of the Engineer. Two separate samples will be taken, one for acceptance testing and one held in reserve for retesting if requested. The aggregate gradation for samples from the conveyor system will be determined according to ATM 304. For HMA samples, the gradation will be determined according to ATM 408 from the aggregate remaining after the ignition oven (ATM 406) has burned off the asphalt binder. Locate diverter devices for obtaining aggregate samples from drum mix plants on the conveyor system delivering combined aggregates into the drum. Divert aggregate from the full width of the conveyor system and maintain the diverter device to provide a representative sample of aggregate incorporated into the HMA.

- b. Batch Plants. Samples will be taken from dry batched aggregates according to ATM 301 or from the same location as samples for determination of asphalt binder content, at the discretion of the Engineer. Two separate samples will be taken, one for acceptance testing and one held in reserve for retesting if requested. The aggregate gradation for dry batch samples will be determined according to ATM 304. For HMA samples, the gradation will be determined according to ATM 408 from the aggregate remaining after the ignition oven (ATM 406) has burned off the asphalt binder.
- 3. Density. The Engineer will determine and mark the location(s) where the Contractor takes each core sample.
 - a. Mat Cores. The location(s) for taking core samples is determined using a set of random numbers (independent of asphalt binder and aggregate sampling set of random numbers) and the Engineer's judgment. Take no mat cores within 1 foot of a joint or edge. Core samples are not taken on bridge decks.
 - b. Longitudinal Joint Cores. The Engineer will mark the location(s) to take the core sample, centered on the visible surface joint, and adjacent to the mat core sample taken in the panel completing the joint.

Take core samples according to ATM 413 in the presence of the Engineer. Cut full depth core samples, centered on the marks and as noted above, from the finished HMA within 24 hours after final rolling. Neatly core drill one six-inch diameter sample at each marked location. Use a core extractor to remove the core - do not damage the core. The Engineer will immediately take possession of the samples. Backfill and compact voids left by coring with new HMA within 24 hours. The Engineer will determine density of samples according to ATM 410.

- 4. Retest. When test results have failed to meet specifications, retest of acceptance test results for asphalt binder content, gradation, and density may be requested provided the quality control requirements of Subsection 401-3.02 are met. Deliver this request in writing to the Engineer within 7 days of receipt of the final test of the lot. The Engineer will mark the sample location for the density retest within a 2-foot radius of the original core. The original test results are discarded and the retest result is used. Only one retest per sample is allowed. When gradation and asphalt binder content are determined from the same sample, a request for a retest of either gradation or asphalt binder content results in a retest of both.
- 5. Asphalt Binder Grade. The lot size for asphalt binder is 200 tons. If a project has more than one lot and the remaining asphalt binder quantity is less than 150 tons, it is added to the previous lot and that total quantity will be evaluated as one lot. If the remaining asphalt binder quantity is 150 tons or greater, it is sampled, tested and evaluated as a separate lot.

If the bid quantity of asphalt binder is between 85 – 200 tons, the bid quantity is considered as one lot and sampled, tested, and evaluated according to this subsection. Quantities of asphalt binder less than 85 tons will be accepted based on manufacturer's certified test reports and certification of compliance.

Sample asphalt binder at the plant from the supply line in the presence of the Engineer

according to ATM 401. The Engineer will take immediate possession of the samples. Take three samples from each lot, one for acceptance testing, one for Contractor requested retesting, and one held in reserve for referee testing if requested. Meet Subsection 702 requirements for asphalt binder quality.

6. Asphalt Binder Grade Retest. Retest of acceptance test results may be requested provided the quality control requirements of Subsection 401-3.02 are met. Deliver the request in writing to the Engineer within 7 days of receipt of notice of failing test. The original results are discarded and the retest result is used for acceptance. Only one retest per sample is allowed.

If the contractor challenges the result of the retest, the referee sample held by the Engineer will be sent to a mutually agreed upon independent AASHTO accredited laboratory for testing. The original acceptance test result, the retest acceptance test result, and the referee sample test result will be evaluated according to ASTM D3244 to obtain an Assigned Test Value (ATV). The ATV will be used to determine if the asphalt binder conforms to the contract. The Contractor shall pay for the referee sample test if the ATV confirms the asphalt binder does not meet contract requirements.

MSB DPW O&M

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January 23, 2020

Appendix B

Subdivision Construction Plan

Date _____

SUBDIVISION CONSTRUCTION PLAN

Subdivision Name _____

Platting Case File # _____

RSA # _____

Developer/Petitioner _____

Phone # _____

email _____

Engineer _____

Phone # _____

email _____

Surveyor _____

Phone # _____

email _____

Contractor _____

Phone # _____

email _____

Required Submittals

Cost Estimate

Drainage Plan

SWPPP (if disturbing more than 1 acre)

THE FOLLOWING IS THE PLAN FOR THE REQUIRED IMPROVEMENTS:

- 1) The Developer’s Professional Civil Engineer (PE) shall be the spokesperson for implementation and completion of this PLAN.
- 2) The PE shall submit the required data and reports in a timely manner. All submittals must be sent/delivered to the Borough’s Platting Office.
- 3) The PE shall supervise all phases of the PLAN and be the point of contact for all contractor and subcontractor work on the PLAN.
- 4) Any proposed changes to this PLAN must be approved by the Borough’s Public Works Department prior to the changes being made.
- 5) Upon acceptance of all improvements and approval of the Final Report by the Borough’s Public Works Department, a Certificate of Construction Acceptance will be issued to the Developer and the warranty period will begin.

Where will driveway approaches be constructed? _____

Will winter construction be performed? _____

Is a subdivision agreement anticipated? _____

Will paving be performed? _____

Will a community water or sewer system be installed? _____

Permits to be acquired: _____

Types of utilities to be installed: _____

Note: If utilities are not installed prior to road construction, the Developer shall coordinate with the utility to either install conduits at the proposed crossing locations or ensure through their Engineer that the road crossings are excavated and backfilled properly. It is strongly encouraged that the road surfacing material be placed AFTER the utilities have been installed.

Planned Work Schedule

Clearing and Grubbing _____
 Installation of Utilities _____
 Subbase Construction _____
 Drainage Improvements _____
 Import and Grading top 6” _____
 Property Corners set by PLS _____

Additional Comments:

AGREEMENT:

It is hereby agreed that the above PLAN is acceptable and will be implemented for the required improvements. It is further agreed that no deviation will be made to the above PLAN without signed acceptance by the Professional Civil Engineer and the Borough Public Works Representative.

Developer's Signature Date

Professional Civil Engineer's Signature Date

Surveyor's Signature Date

Contractor's Signature Date

Borough Public Works Representative's Signature Date